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TRAPPING, TANNING AND TAXIDERMY

BY

FRANK TOSE

THE HUNTER-TRADER-TRAPPER CO.
Columbus, Ohio, U. S. A.

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PREFACE

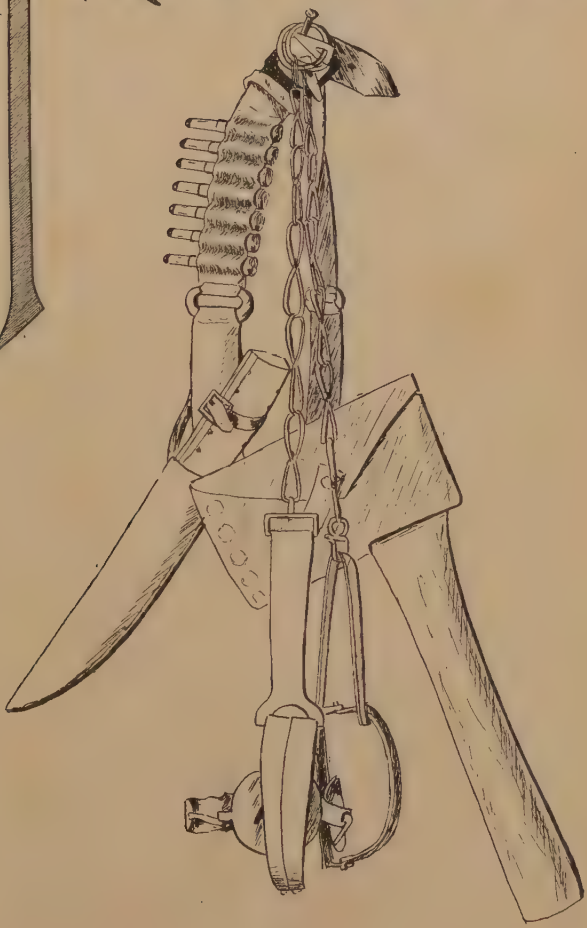
In placing this book before the public it is my earnest wish that it may prove a source of much pleasure and profit to those who are interested in one or all of the subjects of Trapping, Tanning and Taxidermy. I have endeavored to make the lessons as plain as possible, and to this end I have illustrated the various processes with line drawings so as to make them easily understood.

I have further omitted all scientific terms so as not to confuse the beginner unduly, and have given only such processes as are used in the best business establishments of the country,—methods which are used with a view to excellence of workmanship, and at the same time adequate financial returns.

My most sincere thanks are due to Mr. Beam and his son Milton Beam, Mr. J. A. Bryan, Mr. Joe Sterers and Mr. George Manson, all trappers of wide experience in various sections of Canada and the United States for their kind assistance in that portion of the work dealing with trapping.

FRANK TOSE.

TRAPPING



TRAPPING

THE trapping of fur-bearing animals can be made a source of both pleasure and profit to those who undertake it. No small proportion of the fur that is produced in this country is taken by farmers and those who reside in our rural communities. The proceeds derived from the sale of the pelts secured would, in a great many cases, be much greater if they were caught in proper season, and handled in the proper manner. While it is true that the price lists of many firms which deal in furs are inflated, and the returns seemingly out of all proportion to the prices offered, the fault is not always with the buyer. The writer has had to disappoint many when buying furs from them for this reason. I have also seen many seemingly good furs spoil in the tanning through wrong handling in the hands of the trapper. Imagine yourself in the place of the furrier or taxidermist who has paid a high price for a fur only to find that it is practically devoid of hair when it comes out of the tan.

Many who read these pages will, no doubt, take advantage of the instructions on tanning and taxidermy and make up their own fur rugs, robes, etc. To those especially I would say there is only one time to start a job right and that is at the beginning. There are very few of the fair sex to whom a set of fine furs does not appeal. In addition to their use as a means of adornment they are an abso-

lute necessity in most sections of our country owing to its rigorous winter climate. There is also a great deal of satisfaction in doing a job from start to finish and the additional knowledge that the article is genuine and not a cheap imitation as in the case of many of the furs sold today.

In the pages to follow I shall endeavor to give not only my own observations and experiences but also that of others for whose experience in this line I can vouch.

It may be well to state in advance that every precaution should be taken to use and set traps in such a way as will cause as little suffering to the captured animals as possible. Their nervous system may not be quite as finely organized as ours, there is no doubt however that they are highly sensitive to pain and it would be inhuman to cause needless suffering. If for this reason only, your trap line should be visited regularly. Another reason for being on the job is that in many cases your traps will cover with snow. It is best to set traps in such places that the snow will be least likely to drift. In some sections of the country there is also a danger that traps which are set on the banks of streams and rivers will cover with water and then be frozen in, due to the changing temperature and consequent rise and fall of the water.

Let it be also understood that there is no place for a dog on a trap line. In many cases where evidence of your own presence must be so carefully obliterated the presence of a dog would make trapping impossible. I shall not dwell on the use of poison for securing fur bearers for the reason that I do not approve of its use except in extreme cases

where absolutely necessary to control vermin and in such cases it should be used with extreme caution. In settled districts where poison must be put out, the neighbors for a considerable distance around should be notified. Many valuable dogs and other domestic animals are killed by poison set out for fur bearers.

Also many of the animals for which it is set out crawl away and die in remote places and become merely carrion which is just needless waste.

Traps

By far the greater number of fur bearers are caught by the use of steel traps. These are so well illustrated and detailed in the advertisements of their makers and in the various sporting magazines that it would be a waste of space to go into a detailed description of them here.

In purchasing traps it is very necessary to see that the working parts are in good order and that the spring works freely on the jaws. It is better to purchase those with thick rather than thin jaws as they tend to hold the animal better. Thin jaws often cut the flesh and bone and thus assist the animal to amputate its limbs and escape. In this respect it is also better to set traps rather smaller than would be deemed necessary as a trap too large will also break the bone and you may find only a foot when you visit it. With very few exceptions it is an error to bait the pan of the trap. It has been found better to place the bait in such a position that the animal will step on the trap in its endeavor to secure that which its appetite craves.

Steel traps are made in various sizes from No. 0 to No. 6. The smaller sizes are made with a single spring and in the large ones the spring is double. The best sizes to use will be given in the description of the various animals and their mode of capture.

Care and Handling

Traps should be kept well oiled and free from rust. The scent of the majority of fur bearing animals is very keen, and they will soon detect the presence of man. It is therefore best to handle all traps with buckskin gloves. In the case of animals of such keen scent as wolf, fox, etc., it is essential as a further precaution to place traps, gloves, etc., in a pile of horse manure for some time previous to setting. Another good plan has been related to me by M. Beam and that is, where possible to dip the traps for wolf, etc., in the blood of a pig or other animal, two or three times. This will coat the whole, chain as well, with a thin enamel of blood. This method he states has given him great success.

In setting traps in water for beaver, otter, etc., it is best to work from a boat where possible or at any rate to wear rubber waders and approach and conduct all operations in the water.

Devices Used with Steel Traps

Steel traps often need to be supplemented with various devices for several reasons which we will explain.

A spring pole is often used to keep the animal from gnawing itself free and also to hoist it out

of the reach of any other species that may be disposed to make a meal of it. Various ways of using this spring pole are described in Figs. 1, 2 and 3.

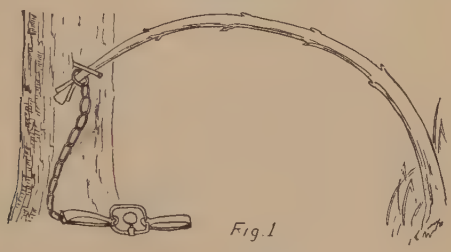


Fig. 1

Fig. 1 illustrates the method of using a spring pole for large sets where they are placed near a tree. A large sapling is stripped of its branches and split at the end. The ring of the trap is then placed over the end and a wedge is driven into the split and secured to prevent the ring slipping off. A large spike with the head cut off is now driven into the tree in the manner shown. In its struggles to escape the animal will loosen the pole which will suspend it at least partially in the air thus minimizing its chances of escaping.

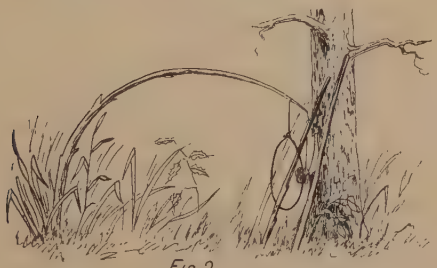


Fig. 2.

Fig. 2, which is explained at length elsewhere, will do very well to attach a trap to in some cases

if the noose is omitted. Another good way is to make a small notch in two trees or sticks and cut a stick of sufficient length to just catch, Fig. 3.

Fig. 3

Regarding these and the other illustrations of the various contrivances used, it is hardly necessary to state that although traps, chains, etc., have been shown exposed for the sake of a more clear and definite explanation, they must at all times in actual use be covered and made as inconspicuous as possible.

Another addition which is known as the clog and is used for such large animals as the bear, cougar, lynx, wolf, etc., is simply a log of sufficient size to impede the movements of the captured animal, but not too heavy for it to drag slowly. It is well to leave it with a number of snags and branches to catch on trees, shrubs, etc., and thus further delay the animal in its efforts to get away. Needless to say the chain must be firmly secured to the clog.

A third contrivance is known as the sliding pole and is used on such animals as the muskrat, otter, mink and beaver. It consists of a long smooth pole with a fork at its upper end, the ring is placed over the pole and it is pushed down into deep water, the trap being generally placed in shallow water.

The animal when caught makes for deep water and is guided there by the ring sliding on the pole. Once there the weight of the trap and the position of pole hold it and it speedily drowns. This is illustrated in Fig. 4. The pole must of course be pushed well into the mud or else be held in such a manner as will resist the efforts of the animal to escape.

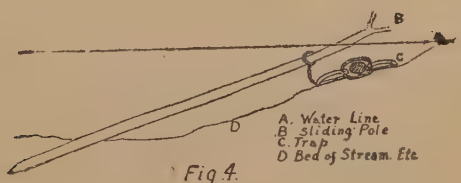


Fig 4.

Fig. 5.

Another adaptation of this is shown in Fig. 5. It consists of a stout wire attached to a fork at one end and a stake or anything convenient at the other. The rock is then sunk in deep water. Some trappers prefer this to the pole.

Deadfalls

Having considered broadly the use of steel traps, we will now turn our attention to those devices

which man, brought face to face with the necessity of capturing the various animals and having no other means at hand than perhaps an axe and a knife, has discovered and adapted. Some of these devices have been in use for countless years. Others are of more recent origin.

Most deadfalls are operated by means of triggers or light pieces of wood placed together in such a manner that the slightest touch will cause them to collapse.

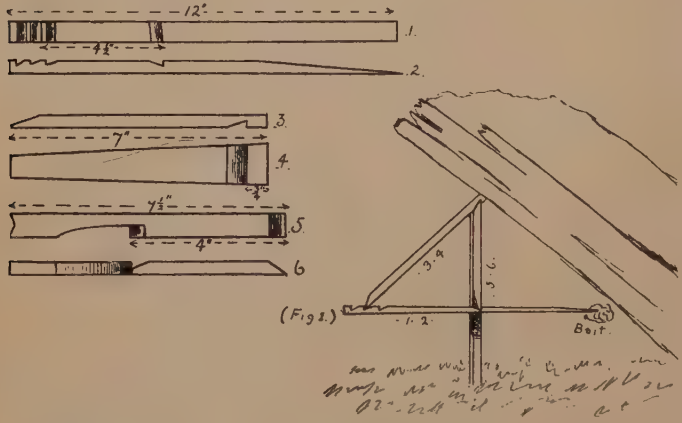
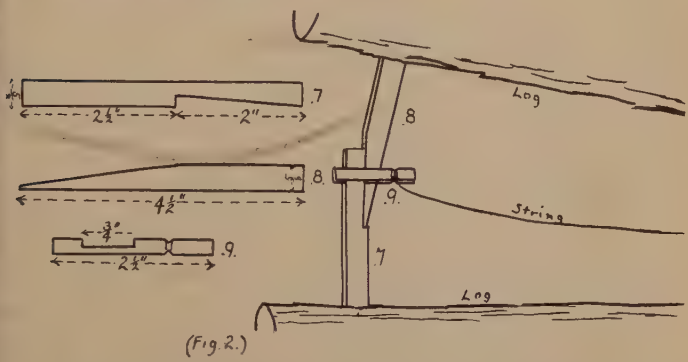


Fig. 1, will show what is known as the figure four. It is composed of three pieces of wood about ⅝ of an inch wide and ⅜ of an inch thick. No. 1 shows a piece about 12 inches long with four notches, three close to the end and one about 4½ inches from them. No. 2 gives a side view of this piece. Note the tapered end. This is to hold the bait. No. 3 is 1 inch wide by ⅜ inches thick and tapered to ⅝ inches. This is seven inches long. A notch is cut at the wide end as shown and the narrow end is

bevelled. No. 4 shows a flat view of this. No. 5 is the upright and is 7½ inches long with a notch at the end to prevent its slipping on its foundation. The top is bevelled at an angle of 45 degrees or more and four inches from the top a large notch is cut with the top bevelled as shown. No. 6 is a side view of this piece.

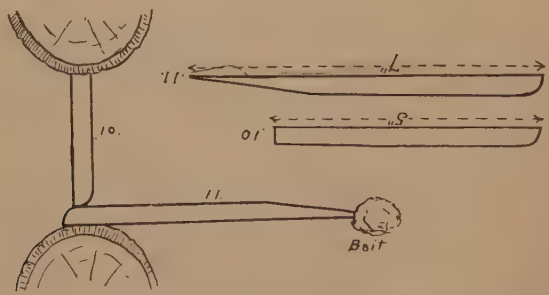
On the right is seen the figure four erected and supporting a large stone. The purpose of the three notches at the end of No. 1 are for better adjustment. In setting this deadfall it is best to place the upright on a flat stone, previously making a slight hollow in the ground underneath so that when the pieces fall they will not hold up the stone or whatever the weight may be.



(Fig. 2.)

The trigger shown in Fig. 2 is of very simple construction and may be used for a number of different deadfalls. No. 7 is a piece ⅝ inches by ⅜ inches and notched about 2 inches from one end, the whole being about 4½ inches in length. No. 8 is the same length and tapered to ⅛ inch from the middle. No. 8 is ⅜ inches square with a notch cut

to about half its thickness and about ¾ inches long. A groove is cut near the end in which to tie the string. This is seen erected, on the right, the idea being that the animal will touch the string and cause the whole to fall.



(Fig 3)

Fig. 3 is even more simple of construction and consists of two pieces of the same size as mentioned previously. No. 10 is 5 inches and No. 11 is 7 inches long. No. 11 is pointed at one end and both are rounded and placed in the manner shown on the right. It will be readily seen that the slightest movement of the bait will cause a collapse.

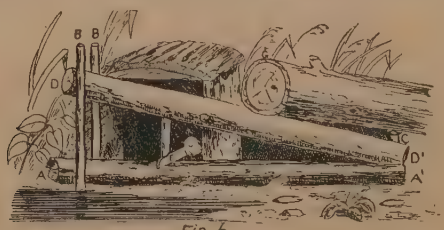


Fig. 6.

It must be noted here that the sizes of the pieces in the preceding triggers are only approximate and may be altered to suit requirements and the animal to be caught.

Mink Deadfall and Walking Trap

Fig. 6 which we will call the mink deadfall, being mainly used for that animal, although it may be adapted to the capture of others, is at the same time simple and effective. The mode of procedure is as follows: The trapper having decided early in the season on his line of traps constructs a number of small houses about 7 inches square. These houses may be made of slabs chopped from a tree or of small sticks and brush. The houses are open at one side only. Next lay a log along the front of the house, A.A.[1]. The end of A.[1] must be split and pushed over a stake, C., to hold it in position. Next drive a stake at each side in the position shown, B.B. Another small log is secured, D.D.[1] and the end D.[1] split as before and pushed over stake. The logs are propped apart firmly and a weight log is

Fig. 7.

placed as shown at G. It is then left until the trapper is ready to commence operations when the fur is in good shape.

When the time arrives a number of triggers are made as shown in detail, page 18, Fig. 3, and placed in position E.E.E.[1] and the deadfall is ready. On account of the small size of the box or enclosure the animal should be about half way over the bottom log when the trap falls.

Fig. 7, which is known as the walking trap, may be adapted in size to any animal. The best position is where a log crosses a stream. A. is a log placed at right angles and held in position at one end by two stakes, B.B. C. is a similar log held up by the trigger D., which is made as shown in Fig. 2. Both logs are held in position at the base by being placed against a tree or stone or they may be split over a stake as shown in Fig. 6. E. is a weight log and must be fairly heavy and placed so that it will hold C. firmly when it falls. S.S. is the string which the animal will touch when it attempts to cross stream on log. It must be well fastened down to some convenient fixture.

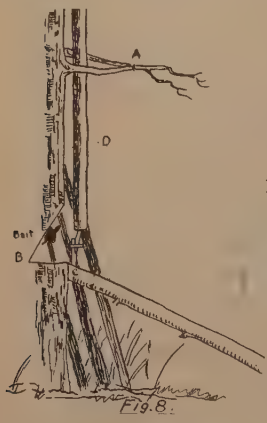
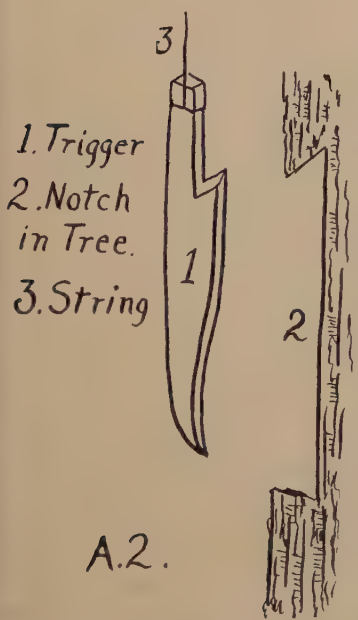


Fig. 8 is a deadfall which is mostly used for marten. For this is necessary to find a tree with two branches which can be tied together as at A. A notch is then chopped in the tree about 18 inches high, B. ' the bait placed in this as m. Now run a pole from the ground to the bottom of notch C. and another, D., through the tied branches. A trigger, Fig. 2, holds the latter pole in place in fuch a position that the animal

will release it in attempting to reach the bait. The opening is closed with poles, brush, etc., so as to allow only a small opening to the bait.

SNARES



A really good snare is shown in Fig. 2. The principal parts seen in detail, A-2. A trigger is made of a piece of hardwood, 1, and attached to a short piece of string, 3. A notch is then cut in the tree or stump with the top cut sloping upwards, 2. The trigger is then attached to the end of a spring pole and about 4 inches back a noose is also attached: for large animals the noose is best made of piano wire, and the distance from the end will of course be greater. The trigger is then baited and caught in the notch in tree. Poles and brush are then placed so as to allow only one way of approaching the bait. The noose may if necessary be lightly tied at the sides with grass or fine cotton to hold it in position. These threads must be very weak or they will interfere with the working of the noose.

An excellent snare for fox and lynx is con-

structed as follows: (Fig. 9). In young poplar scrub where rabbits are thick and in a convenient place in a runway, lay two sticks across about 3 feet from the ground A.A. Directly under sticks lay two short pieces of log, B.B. Next build up all around with dead brush, front, back, sides and roof,

Fig. 9.

leaving only about 12 inches open in front and back between poles C.C., C.C. Now attach noose to center of poles A.A. and tie at sides with fine grass or thread. Make noose large enough so that a rabbit can pass through readily. It is a very good plan to attach a spring pole to each of the cross pieces A.A. The animal will jump back when it feels the noose and loosen these cross pieces, and be jerked out of harm's way. With these and the various triggers and spring poles shown elsewhere the reader will be able to devise any number of sets to suit his requirements.

An excellent device and quite simple for catching mink is to procure a number of square pieces of old board and bore a hole in each large enough

to allow the head of the animal to pass through easily. A number of nails are now driven through the edge of the hole in such a manner that their points project inwards. These points are then filed quite sharp. The boards are then plastered with mud to render them inconspicious and propped up under stumps, logs, etc. A bait is placed behind and all openings closed up. The animal will put its head through the hole in its endeavor to reach the bait which is placed within, and finding it can go no further, attempt to draw back and is impaled on the sharp nails.

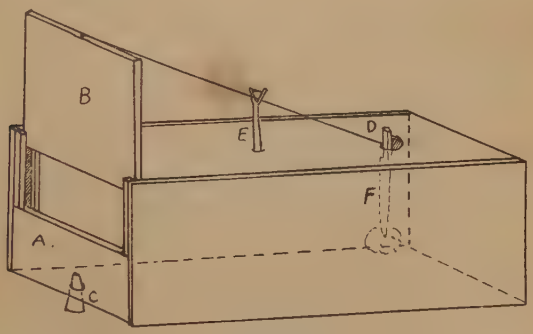


Fig 25

A very effective box trap is made as illustrated in Fig. 25. It can be adapted to the capture of any small animal and the size may be varied to suit. First make a box of boards and close one end. Next half close the other end as shown A. Nail two pieces of lath on each side to form a groove for the door B. to slide in, allowing plenty of play. Then bore a hole in the bottom where the door will strike when it drops and fit a pegtop shaped plug into this,

C. Well to the back of the box, bore a hole, D., and have it protected with a piece of tin on the inside. This is best done before the box is put together. A guide is now fixed in the top of the box at E. The door is held up by being connected with a string to the trigger F. indicated by the dotted lines. To set the trap for mink, etc., place it at the edge of a stream, etc., with the water almost up to the edge of the board A. The animal touches the bait, releasing the trigger, and the door in falling, knocks out the plug C., which allows the water to enter and drown the animal. The door should be weighted so that it will not lift it. This trap is also good for rabbits, weasel, etc., if left without the board A. and the plug C.

The Muskrat

The muskrat is found in marshes, creeks, ponds, and on the banks of rivers and lakes almost everywhere in North America. Enormous numbers are trapped annually, and its fur is one of the staples of the trade. By devious ways and processes it becomes Hudson Seal, River Mink and other kinds of fur with high sounding names. Almost every country boy is familiar with the muskrat, so a detailed description of its size, form and color would only take up space that could be used to better advantage. Its habits are mainly nocturnal. In sloughs or marshes it usually builds houses three or more feet high, conical in shape and with one or more entrances under water.

The usual way of trapping rats is by placing steel traps in these holes. Another simple way is to find a rock which is a little above the surface of

the water near the shore, or if no rock is available drive a stake into the mud until the top is a few inches above the water, and make a bed of leaves and grass on end of stake. Then set trap on this, drive another small stick quite close with parsnip or apple for bait and another over which to slip ring of trap. This latter must have a crook on end to prevent ring slipping off.

In winter a very good plan is to chop a hole in the house, preferably on the south side where the walls are much thinner, and place a trap No. 0 or 1 in the chamber within. This trap is attached to a stake by a length of wire. Stake is then pushed down inside house. Be sure and leave lots of wire so animal can reach water and drown. If this is not done it will soon gnaw off its leg and escape. Be sure also to close opening in side of house as soon as possible, otherwise interior of the house will soon freeze and be rendered useless.

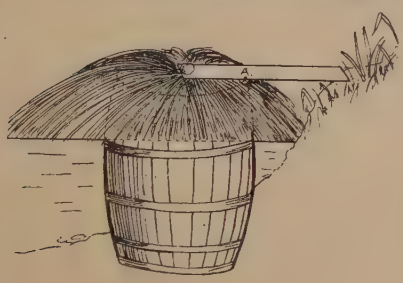


Fig. 10.

In springs and in places where the water is not frozen a very effective trap is the barrel trap (Fig. 10). It consists of a barrel placed close to the bank in the water and the portion exposed covered with rushes with their ends pointing inward to form a light, springy covering. A short piece of board is then placed in such a manner that when the rat runs to the end, attracted by the bait, it will over-balance

and be thrown into the water below. If two nails are driven into the edge of the board at the point of balance, A., and two staples driven over them into the edge of the barrel and the bait fixed to a large nail driven through from the underside of the board, the trap will catch as many rats as care to come along in succession. G. M. says that it is always best where boards or boxes are used to plaster them with mud to render them inconspicuous.

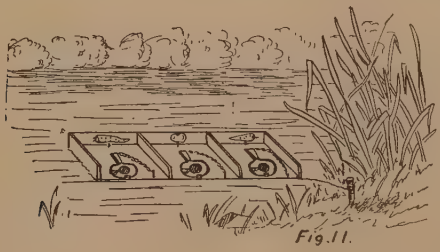
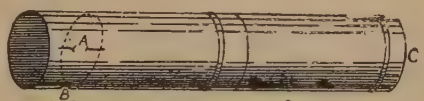


Fig. 11.

Another excellent set for which I am indebted to J. S. is shown in Fig. 11. This is for a situation where there are known to be rats but where their runways, etc., are not sufficiently defined to render their capture there possible. It consists of a piece of board or plank about 12 inches wide, partitioned off as shown, and the bait, preferably parsnip, carrot or apple, placed on large nails driven through from underneath. The traps are then set so that the rat in climbing up to reach the bait will be caught. It will then make for the water and drown. The chains of the traps are stapled to the edge of the board. If preferred the board can be made twice as wide and traps placed on both edges. The center partition A.A. can be dispensed with in this

case. The board is attached by a wire to a peg in the bank as shown.

On certain large lakes the rats inhabit the banks but build for themselves small feeding houses about two feet high and at some distance from the shore. These houses are very inconspicuous and are hard to see from an elevation when covered with snow. If however the eye is placed on a level with the surface of the snow the hillocks may be clearly seen, sometimes in great numbers. It is well to approach these houses cautiously as the ice is very thin in places. A piece of plank is a good thing to use as a safeguard and may save you a cold bath. The houses are broken open at the top and the trap, attached to a light pole about two feet long is placed inside. The pole is left on the outside. It is better not to open more than four or five of these houses at one time and be sure and close them quickly to prevent freezing.



A. Damper. B. Dent in Pipe.
C. Closed end.

Fig 12

Another good trap where the holes of the rats will admit of its use is the stovepipe trap (Fig. 12). It consists of two or three lengths of common stove pipe closed at one end and with a damper placed in the other in such a manner that the rats may enter but are prevented from returning by a dent placed in the bottom of the pipe outside the damper which prevents it from swinging out at the bottom.

The Weasel

This small animal of which two species are commonly found in North America is the ermine of the fur trade. The larger Weasel is more common. Both species attain their white coat only in winter. The summer fur which is brown above and white or yellow below is of less value. The large Weasel in addition to its much greater size is distinguished from the smaller one by having a black tip on its tail. The small Weasel is entirely white in winter.

They are in comparison to their size the most ferocious of the carnivora or flesh-eating animals. They will at times kill simply for the sake of it, sucking only the blood of their victims, as many a farmer and poultry rancher has found to his cost. The food of the large Weasel consists of rabbits, grouse, ground squirrels, chipmunks, mice and almost every variety of small birds and animals, in addition in settled country they kill great quantities of domestic fowl. That of the lesser Weasel consists mainly of the various species of mice and shrews, therefore it is in the main beneficial.

They are often caught in traps set for marten and mink. The right size of trap for weasel is No. 0. An excellent set is that described in Fig. 13, and is simply a pole pushed into the snow or ground with the bait hung on the upper end, of just sufficient height that the animal will have to stand on its hind

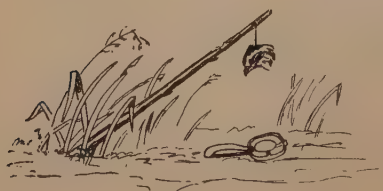


Fig. 13

legs to reach it, and thus be caught in the trap which is directly underneath. Needless to state, the trap must be covered and the chain fastened. Traps may also be set along the banks of streams and in nooks and crannies among rocks, etc., in the same manner as for mink.

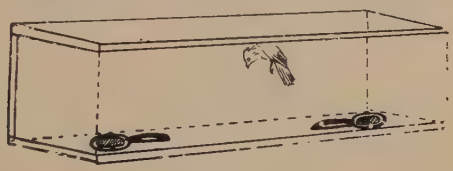


Fig. 14

A very good box trap is shown above. It consists of a box about 3 feet long made from two pieces of six inch board and two pieces of four inch board. The bottom board is cut out to allow the two traps to be let in flush with the upper surface. The pieces are better cut right out with a turn saw and a thin board nailed on the bottom to keep the traps from falling through. The traps are then covered lightly, the bait, which may be a bird, portion of a rabbit, etc., is fixed at the center of the top of the box. The weasel in entering the box from either end to secure the bait is bound to step on the pan and be caught. Traps must be set lightly.

An excellent way to trap the weasel around the farm is to take an old box and bore a hole in it just large enough to let the animal pass through and then place traps and bait on the inside. Box is then covered with a board or anything handy. This will do the trick and there is no danger of poultry, etc., getting caught in the trap.

In setting a line of traps for weasel it is a good plan to drag a rabbit along the trail.

The Mink

The mink resembles the weasel with the exception that it is much larger and stouter. In color it is a rich dark brown with a small white patch on the chin and breast. Like the rest of the weasel family its mode of progression is by a series of leaps. Its range is practically all over Canada, Alaska and the northern part of the United States. Its food consists of muskrats, mice, squirrels, frogs, fish and birds and their eggs. It pairs only in the breeding season which occurs as a rule in February. During this time the male mink will travel great distances. At all times a great traveller it is especially so at this season. The female rarely goes far from its den. An instance is related by J. A. B. who states that on one occasion he dug out a mink den whose owner had departed. I presume it had been trapped. This den contained about a barrelful of the different things enumerated above and in addition pieces of domestic fowl, fresh water clams, and large beetles.

Where the den is located on the banks of a stream or lake they usually have a hole under water and keep a hole open in the ice. J. A. B. also tells of seeing one on the ice which immediately made for its hole. After waiting for a period of ten minutes or so, he approached and found that it had already practically succeeded in filling the hole from below with moss, etc. It would then of course soon freeze over. While speaking of dens it seems ap-

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propriate to state here that it is unwise to set a trap for mink near the den. If the female is caught the others will leave the vicinity. A favorite locality for mink is on the banks of mountain streams, where there are lots of trout. In such situations sets are made as illustrated below.

Fig. 15.

The mink in its travels in search of food to satisfy its voracious appetite, will investigate piles of logs, rocks, old stumps, etc. There place bait well under in such a position that the mink will be caught by the hind foot in the trap, which is covered with rotten wood, etc., and the opening closed in such a manner as to leave an entrance only in direct line with the pan of the trap. The secretion from the scent glands of the female mink may be used to advantage, especially in the mating season.

Mink are very fond of fish and many instances are related by fishermen of them stealing a catch. The following facts were given me by J. A. B. While fishing near a small island in Lake George in southeastern Manitoba, it being quite late and some distance to the main shore, he took his catch, 13 three-pound trout and laid them on a log and camped for

the night. Next morning he was surprised to find that they had all disappeared. Next day he placed five more trout on the log and set two No. 1 traps two feet apart on the same log and caught a fine male mink. These fish seem large for an animal of that size to drag away successfully but, having fished that lake myself, I can vouch for the weight as for some reason practically all the trout that are caught in that lake are about three pounds in weight.

In sloughs where there are no convenient places tc set as described in Fig. 15, a really good set is that described for weasel in Fig. 13. A very simple set where there are logs crossing a stream is to cut a notch in the upper surface of the log, just sufficient so that when the trap is placed in it the pan will be level with the surface, and then cover the trap.

Another good plan where there is a creek six or seven feet wide and no fallen logs or natural crossing places, is to build a cairn of rocks, moss, etc., in the center with the top just above water level and set a trap there. Mink and sometimes foxes will jump there to cross stream.

The following set which has given him excellent results is given me by G. M. In a place near water where willows, grass, and rose bush are very thick, make a narrow trail about three inches wide and back from the shore about 20 feet. Take soft mud and plaster trail and sprinkle with mink scent. Place one to three traps (No. 1½) in back end of trail a foot apart and cover with leaves, grass, etc., and put bait—chicken, rabbit or bird—on back end

of trail. Make sure that the bush is thick and that the trail is the only way to the bait and traps.

The Marten

The marten is one of the most beautiful of our fur animals and lives almost exclusively in the dense pine forests. It is essentially a wilderness animal and is found most abundantly in haunts remote from civilization. I know of several trappers who make the trapping of marten their sole business in the winter months. In fact in the high pine covered mountain ridges which they inhabit there are few other fur bearers of value. In winter the snow often gets ten or twelve feet in these places and hence they are nearly always trapped in trees.

In size the marten is a little larger than the mink on the average, and its fur is a rich brown and quite soft and long, with a distinct yellowish patch

Fig 16

on the throat. Like the rest of its tribe it is very ferocious and inquisitive. It is quite frequently caught in deadfalls. Owing to the recent high prices which it commanded its capture has been

quite profitable where it has been found in fair numbers.

The tracks of the marten, like the fisher, may be at times seen following deer. One of the best sets for marten is shown in Fig. 16, as described by J. S. A notch is cut in a large tree about four feet from the snow level and the bait is fastened there about eighteen inches above the trap, (No. 1 or 1½). The trap is then covered lightly and the chain fastened to the tree as described. A small log is then placed to act as a runway and one side of the notch closed with sticks, etc.

Fig 17

A very good adaptation of this method is shown in Fig. 17. It is more simple and entails less work. It consists of three sticks about fifteen inches long, driven into the tree in the manner shown. The bait is then fastened to the stick (1) and a roof of bark, twigs, etc., laid over 1 and 2, to keep off the snow. The trap is then slipped over 3 in the manner shown in Fig. 18, between the spring and under the bottom bar of the trap. Be sure not to get the stick between the bar and the pan. If this is done it will interfere with the fall of the pan and as a consequence the trap will not be sprung. This bottom stick (3) need only be driven lightly into the tree so that the animal will loosen it in its efforts to escape. The chain is fastened to the tree so that the animal will hang without touching the ground or snow. This will prevent its severing its feet and

escaping. As stated before, it is wise to have most traps for small animals set in this way, otherwise all you will find will be a few claws or a foot.

In setting traps for this as well as all other animals it is well to look for such places as nature has provided, which can be readily adapted to your requirements, and which as well as making a more

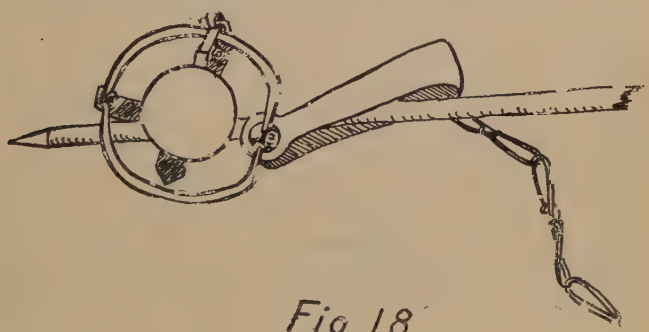


Fig 18

natural set often lessen your work and save time, which is valuable when the trap line is long and the hours of daylight few. Marten may also be caught in deadfalls as described in Fig. 8.

The Fisher

The fisher is the largest animal of the weasel family that inhabits North America. In form and color it resembles somewhat the marten but it is practically twice as large. Its home is in the coniferous forests of Canada and the United States and its range extends wherever this class of forestation occurs. It is nowhere common and is fast becoming extinct in the southern part of its range. It is very

active in its habits and as much at home on the ground as in the trees.

Its food consists of anything that comes along that is not too big to tackle. It will also rob traps both of bait and the captured animals in them. It is perhaps the only animal that can successfully attack and kill the porcupine. My friend, J. A. B., to whom I am indebted for most of the information on trapping this animal, tells me that on one occasion he found the remains of three porcupines in one place on a rocky ridge in southeastern Manitoba. These porcupines had been killed by Fishers.

I also well remember some years ago having a fisher through my hands for mounting. Upon skinning the animal, I found that its hide was a mass of sores, caused by porcupine quills which had entered the skin and on account of the barbs at their tips had kept travelling between the hide and the flesh.

Fig. 20

From appearances it seems that it must surely have died from the effects of these quills, as no doubt many of the species must do.

One of the best methods of trapping the fisher is illustrated in Fig. 20. The method employed is

as follows: Find, if possible two trees that grow together at the base and build a roof between them about three feet from the ground. Next enclose the back in the same manner and place the bait at the back of the enclosure and high up. Next place the trap (No. 2 is a good size) a few inches inside the opening and cover with pulverized rotten wood, dead leaves, etc., in such a manner as not to interfere with the working of same. Set traps across opening in manner shown. It is a good plan to place a piece of tissue paper over pan of traps to prevent clogging. Next enclose front in same manner as roof, etc., leaving only a space of about twelve inches open. In building these shelters or houses, for trapping all animals always use dead wood, as green wood will often attract rabbits. These will often spring the trap in their efforts to eat the bark. Where possible use a spring pole with this set, and close to water a sliding pole.

Where two trees are not available, shelter is best built with a single large tree for a back. This shelter is constructed by taking four sticks about three feet or more long with a crotch at one end, and fixing them into the snow or ground, two against the tree and two about two feet six inches away, forming the corners of a square enclosure. Four small sticks are now laid across the crotches and the roof laid on these, the sides and roof are then built as described for Fig. 19.

Another way is to find two fallen logs about eighteen inches apart and approximately parallel, close one end and make roof by laying over dead sticks. This will leave only one end open, the bait being placed in the back as described before. The

trap is placed just inside the opening and covered.

J. A. B. also informs me that it is well to build two sets for fisher as they generally travel in pairs. The best bait, as will be readily understood from previous remarks, is the flesh of the porcupine. Next in importance come deer, rabbit and birds, etc. Fisher may be also successfully trapped by deadfalls. Their tracks resemble those of the marten only much larger.

The Coyote or Prairie Wolf

The prairie wolf is so well known as to need no description. Its home is mainly on the vast prairies of Canada and the United States although it is found in smaller numbers in the valleys of Western Ontario and British Columbia, and more rarely in the wooded ridges and mountains within its range. It is cunning, sly and in most respects cowardly. It is comparatively difficult to trap and much ingenuity and care must be exercised to capture it. Where it inhabits wooded country, notably in Western Ontario, it is somewhat larger and is known locally as the brush wolf. This larger size is due to environment and possibly food supply, and does not constitute a distinct species.

G. M., after many ineffectual attempts to trap a certain bunch of wolves was successful in capturing three in a like number of sets that he made in the following manner: Having prepared the way by placing traps in a manure pile a week previously, he covered his feet with pieces of old sacking and put gloves on hands, proceeded to set traps, three in number, around bait and about two feet six

inches from it. The traps are best set on a high knoll or raise in the ground as the snow will not collect so deep in this situation. A slight hollow must also be made to set traps in so that the pan will be level with the ground.

To cover them take a piece of tissue paper (white if there is snow) and then take two lumps of snow and rub them together so as to cover the

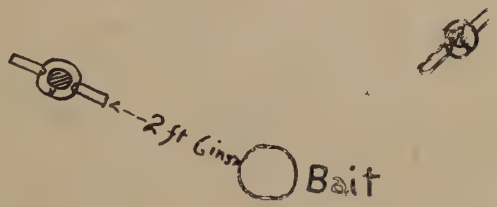


Fig 19

tissue paper lightly. If there is no snow use earth and have the tissue paper of a darker brown shade. Leave set as natural as possible. It is well to put some attractive animal scent on the sacking which covers your feet. This will leave a trail of scent for animals to follow. Bait may consist of dead horse, chicken or rabbit, or meat of any kind. A glance at the diagram Fig. 19 will give a correct idea of this set.

It is one of the habits of coyotes, no doubt due

to their extreme caution, to examine a bait or carcass by circling around it. They will often jump upon any slight elevation to get a better view. Fig.

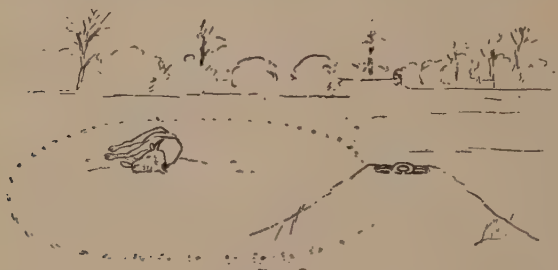


Fig. 21

21 shows a method of taking advantage of this habit. A carcass or any suitable bait is taken to a good location and a pile of manure is hauled and placed fifteen or twenty paces away. A trap is then placed in the hollow made to receive it on the top of the manure pile and lightly covered. The pile should be about three feet high. A number 3 double spring trap is large enough. It should either

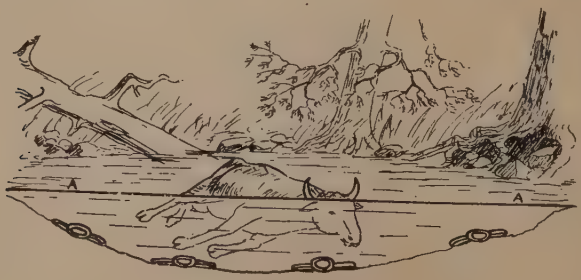


Fig. 22.

be strongly staked or attached to a clog, the clog should be lightly covered and hidden.

An effective set is used by the Indians in this vicinity, and should prove good where there is a pool of water that does not freeze over. A glance at Fig. 22 will assist the explanation. The set is shown in section A.A. being the water line. A carcass is dragged on horseback to the water-hole, and the traps are set around it under six inches of water as shown, several paces from the bait. They must be properly staked or clogged and entirely encircle the bait. Wolves are in many respects similar to dogs and if a small bush is situated near where you have made a set, it is a good plan to place a trap there as the wolf will likely visit it to urinate.

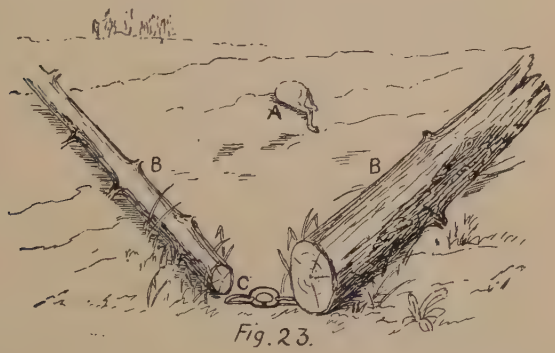


Fig. 23.

Another habit is to try to drag the bait away. Advantage may be taken of this by placing a bait (of sufficient weight that the wolf may drag it slowly) upon a hillside where there are fallen logs, as shown in Fig. 23. The bait A. is placed well up the hill. One log will likely be found in the right position and another can then be arranged to suit B.B. The trap is then placed and covered in the opening

C. The wolf will back down the hill with the bait and be caught in the trap.

The Red Fox

The red fox is found pretty much over the whole of North America with the exception of part of the central portion which is treeless. I have also made its acquaintance in England, in Alaska and Siberia. The American fox is larger than the European, and generally becomes larger as we proceed north.

The cross, and the valuable Black and Silver Foxes are merely color phases of the Red. Owing to their great value as furs, the farming of Silver and Black Foxes has become of recent years quite an important industry, notably on Prince Edward Island. I have never had the good fortune to secure a Silver Fox but have dug Red and Cross foxes out of one den.

The fox is one of the most cunning and sagacious of our fur animals and great care must be used in trapping it. It is absolutely essential that the traps be perfectly de-odorized as far as human scent is concerned. This is accomplished in several ways. Traps may be set in a manure pile as for wolf or they may be washed perfectly clean and smoked over burnt chicken feathers.

A good set is made in a similar manner to Fig. 20. Spread a quantity of chicken manure on the ground where there are signs of fox and set three No. 2 traps around as shown, and well covered. A dead mouse or two makes a good bait to place in center. It is also a good plan where there are musk-

rat houses and fox in the vicinity to place a trap on the top of a house here and there.

And you can also pave the way by taking a handful of small pieces of cheese, of which it is very fond, and throwing them down where Reynard frequents. Repeat this every day for a while till you get him coming regularly. Then tie a mouse to pan of trap and imbed in ground with only the mouse exposed. Rest of trap must be covered with light material. Complete the set by placing a small piece of cheese in the mouth of the mouse. M. B. states that the fox believes the mouse to be stealing its cheese, and puts its foot down, and is caught.

Where Foxes are in the habit of crossing streams on logs, a slight hollow may be made in top of log just sufficient to allow trap to be imbedded with the pan level with the upper surface of the log. It must then be covered lightly. A good snare is that explained in Fig. 9 (deadfalls, snares).

Foxes are known to frequent old campfires and pick up such scraps as remain around. Trappers often take advantage of this by placing a trap in the ashes, having previously thrown in scraps of bacon rind, etc., and allowed them to become partially burnt. It is a good plan to make a fire purposely to make this set.

The Canada Lynx

The lynx is an animal of the cat tribe. Its range is from the Northern States to the Northern Limit of Forestation. Its place is taken in the south by the bob cat, an animal similar in form but smaller and of a darker brown color and more spotted.

On the coast of Southern British Columbia and in many other places where their ranges join, both are found in fair numbers.

The lynx especially is noted for the beauty of its fur, it being long, fine and soft. Its ears are adorned with long tufts of black hair and its cheeks have a fine growth of side whiskers. Its tail is short and has a black tip. The lynx is also noted for the extreme length of its hind legs, which enable it to make enormous leaps.

Its chief food consists of rabbits and its numbers increase correspondingly with that animal. It also feeds on grouse and various other small birds and animals and will not hesitate to attack deer. Tales are abundant of its attacking men but I have not been able to verify any of these. Like all cornered animals it will put up a fight when trapped or wounded and at such times will make a sorry mess of a dog, one of its habits being to lie on its back and rip with its claws which are very sharp and powerful.

The snare illustrated in Fig. 9 is good for lynx and had best be set with a spring pole. Another, and perhaps the most generally used is that described for fisher, Fig. 19. This had best be set with a large clog as the lynx is a great climber and if the clog is not sufficiently heavy it may take to a tree and thus escape notice. Traps may also be set under stumps, logs, etc., as described for Mink, Fig. 15.

The Bob Cat is similar in most respects to the lynx and may be trapped in the same manner. In districts where it is abundant it is hunted with dogs. Like the cougar and other animals of the cat tribe

it will then take to a tree and is then easily shot down. A No. 3 trap is best for lynx.

The Bear

There are two species of bear commonly known in Canada. The grizzly, whose habitat is the lofty mountain ranges of the west, is seldom trapped, therefore a brief account of that species will suffice.

This animal is credited with being of a most ferocious nature and it is commonly understood that it would attack a man at sight; undoubtedly in the early days before the advent of the powerful modern firearms this was the case. During the years I have lived in the west I have met many sportsmen who have successfully hunted this animal and practically all agree that in most cases if unmolested it will endeavor to escape. A wounded grizzly or a female with cubs is a terrible antagonist and quick shooting is necessary as they can move with remarkable speed for such a heavy and apparently awkward and lumbering creature. I know of one instance of which a grizzly took off half the head of an Indian with one stroke of its powerful foreleg.

The black bear is fairly common throughout the forested portions of Canada and the Northern United States. It is common belief that the brown or cinnamon bear is a distinct species but such is not the case. I have myself seen on several occasions a black bear with one brown and one black cub.

A bear that is identical in form with the black bear is found on one of the islands that adjoins the coast of British Columbia. It is entirely white and quite a number of examples may be seen in the

museum at Victoria, B. C. This is credited with being a distinct species. There are still some who think it is a family of albinos. Not having sufficient knowledge on this subject the author does not offer an opinion.

The black bear feeds on small animals, ants, wild fruits, and is especially fond of honey. It will go the limit to rob a wild bee's nest. It is also fond of fish and pork. Regarding the former, in the fall on the Western coast, where the salmon run in countless numbers, it feeds almost entirely on them and when killed at this season the flesh fairly reeks with the smell. This is also true of the large brown bears of Alaska and Siberia. I have seen where they have stood on the banks of streams in these localities and with their paws have thrown salmon several pounds in weight a distance of twenty feet or more, the cubs then eating a portion out of the thick part of the back.

In trapping the black bear the Indians often construct a trap of logs but the No. 5 steel trap is better and less trouble. This is a very formidable instrument and near settlements a notice should be posted and the neighbors notified, as a man would be helpless if caught in it. It is set by some in an enclosure as described for smaller animals and the bait placed well back. A few sharpened sticks or a log placed directly in front of the trap is good. The bear in stepping over these obstacles will be caught by the foot. A clog must be attached, and the whole trap, chain and clog, covered.

Another good way is to suspend a bait from the limb of a tree and about six feet from the ground, and place the trap directly underneath. Bait may

consist of a bag of apples, or a portion of honey, or burnt sugar. Venison is also good. Baits should be large so as to throw lots of scent.

The Otter

This valuable fur animal is found generally throughout the whole of North America. Its food consists almost entirely of fish. Its fur is a rich dark brown in winter, somewhat lighter on the throat and chest. A good sized otter will measure five feet in length including the tail. Unlike many other animals the otter remains abroad all winter and its tracks may often be seen far from water. It seems also to have well defined routes of travel which it covers at fairly regular intervals. Trappers take advantage of this by placing traps in these runways.

Otter are very playful and are fond of ascending steep banks and sliding down them with the legs placed close to the sides. These slides are well defined and a good place to put a trap is at the foot under about six inches of water. It is better to place traps just a little to one side of the center of the slide on account of the position of the feet, also bend over one spring and place it close to the bank and have jaws of trap so that they will catch the feet sideways, also bend up the bar side of the trap so that it will incline slightly towards the bank and not with it or the otter may slide directly over it. Trap must be attached to a sliding pole. After all is in shape a little loose drift, sand, etc., should be sprinkled over and allowed to settle on trap to cover it lightly.

Otter often have places which they use regularly to deposit their dung. These places are generally around drifts, etc., and the trail to them is well defined. These are also good places to set traps.

In setting traps for otter be careful whenever possible to conduct all operations in the water, and to sprinkle traps which are away from it liberally to remove human scent. This is done by means of a branch dipped in the water.

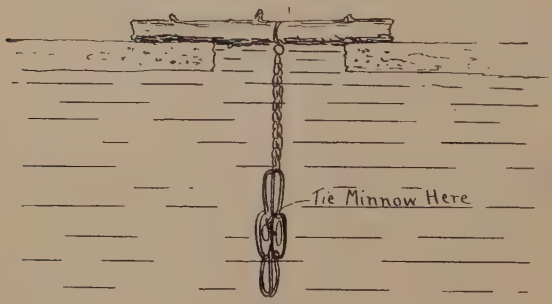


Fig. 24

M. B. relates that whilst fishing at one time in a deep pool of water with minnows, he was surprised to find that the minnows were taken repeatedly and in a manner that was curious. Dropping the bait cautiously through the ice and looking down, he was surprised to see an otter take the bait. He devised a plan to catch Mr. Otter and tied a large minnow about seven inches long to the bed piece of a trap and fixed another trap to it, back to back, as shown in Fig. 24. These were let down through the hole to the length of the chain which was fastened to a clog left over the hole, and the otter was caught. He states that he has been suc-

cessful with this on other occasions where the place was favorable, that is, in fairly deep holes where the water is comparatively still and there are lots of fish.

Another good way in a stream that is frequented by otter is to find a log that is submerged or partially so and cut out a notch so that water will run through this small channel. This must be done quite early in the fall so that the otter will get used to this passage. In season place a No. 3 trap on each side of the notch in the water. Some trappers use a No. 4 as an otter in the water is extremely powerful.

Still another plan where circumstances will permit is to make or find a pool quite close to a stream and have a very shallow outlet to the stream. This may be kept stocked with fish and traps set in season.

The Beaver

The beaver was formerly common over the whole of North America, its numbers have diminished so greatly of recent years that stringent laws have been passed for its protection. At one time its pelt was the standard of value in trading, especially with the Indians, and it has played no small part in the history and development of the country. I would advise those who wish to take up trapping to first look up the game laws of their province or state, as to the taking of beaver, as over the greater part of the country the season is closed for some years to come. However, it is far from being uncommon and has increased so much of late in some of the places where it has been protected that there is no

doubt that the laws will be adjusted to suit conditions in the near future.

A full grown beaver will weigh as much as sixty pounds. Their bodies are heavy and shapeless, the legs are quite short and the feet are webbed. The two most remarkable features of their structu e are their teeth and their tails. The latter, which are flat and almost a long oval in shape, have the appearance of being covered with scales. Their teeth are, however, the most wonderful feature. With them they cut down trees up to thirty inches in diameter, each bite leaving two parallel grooves as though cut with a carpenter's gouge. Their food consists of the bark of willows, poplars, etc. Their habit is to build dams to interrupt the flow of streams and thus flood large areas and form ponds in which their houses are built.

The fur of the beaver is of a rich brown in color, some specimens being almost black, whilst Albino, or totally white beaver, are by no means uncommon. The fur is of two kinds. The outer is long, coarse and glossy and the inner is soft and thick and of a greyer tone. It is in this form, after the outer fur is removed, that beaver garments are often seen.

Traps may be set for beaver in the runways and slides which they use to get their logs to water.

The usual place is just where they enter the water and about four inches under. A bait is first prepared by pounding the end of a stick till it is all frayed out and then smearing it with a mixture taken from the glands which are found under the tail of beaver. There are four glands, two contain-

ing what is known as bark musk and the other two containing oil musk. These two secretions are mixed together to make the medicine, which is very attractive. The stick is so placed that in attempting to reach it the animal will be caught by the hind foot. The trap must be covered and attached to a sliding pole or wire, Figs. 4 and 5.

It is better not to set traps on houses or dams as beavers then become very suspicious and will eventually leave the country.

The trap for beaver is usually No. 3. It is generally understood that beaver are very cautious. Although apparently quickly developed when molested, this is not always the case. J. A. B. tells me he has watched one for an hour not more than ten feet away and has also related many other instances which go to prove that in a normal state they resemble very much in mental capacity other rodents to which family they belong, and whose brain and mental powers are not great as a rule.

The Wolverine

This is a heavy-bodied, powerfully built animal and is the largest of the Weasel family. In color it is a chocolate brown with a lighter patch above the eyes and extending around the sides of the face. There is also a band in the form of a horseshoe extending from the shoulders around to the root of the tail. This is of a yellowish brown color. It is also commonly known as a glutton and well deserves the name. It will follow a line of traps and devour the animals in them. That which it cannot eat it will destroy.

The Northern Indians and Eskimos use its fur to trim their hoods and parkas, this for some superstitious reason. Whilst in Alaska some years ago I was given a different reason, and although I am not quite sure, it seems that it was on account of some peculiar property in the fur which prevents it from matting with the sleet and snow.

There seems to be no particular method of trapping these animals for they can steal bait as readily as anything else. A trapper of my acquaintance caught one recently in a trap set for bear with the entrails of a pig scattered around by way of attraction.

The Badger

The Badger is too well known to need a lengthy description. About two feet five inches in length inclusive of tail, its body is squat and broader than deep. The fur on the back is long and fine and of a yellowish gray color. It is remarkable for the extreme length of its claws, especially on the fore feet. With these it can burrow with amazing rapidity.

Its habits are mainly nocturnal and its food consists of mice, moles, gophers, etc., hence it is found in greatest abundance on the prairies which it makes in places dangerous to horsemen on account of the number of holes that it digs in search for food.

It is fairly easy to trap. The mode of procedure being to place a trap No. 1½ to 3, in the mouth of its hold and cover lightly. The stake that holds the trap must be driven well into the ground and covered, otherwise it will dig it out.

The Skunk

The common Skunk is universally well known and respected (?). He is an animal about the size of a cat and the biggest part of him in more ways than one is behind. He is all black, where he is black, and the rest of him is white, the portions of each varying so much that no accurate description is possible. These white patches are mostly a stripe of varying size on each side and running into the tail and often another patch on the head and a stripe between the eyes. That is close enough for anyone to get acquainted, especially if the skunk is alive. It is especially noted for the most powerful odor which it has the power of emitting. This is caused by a fluid secretion which is contained in two glands beneath the roots of the tail. This can be thrown a considerable distance.

The usual way of trapping a skunk is by placing a No. 1 or 1½ trap in the entrance of their holes and covering it lightly. Fix the chain as far from the hole as possible so that it cannot get in as in this case it is somewhat difficult to extract. The best way to kill a skunk is to take a pole ten or twelve feet long and attach to the end a noose of fine wire. Approach the animal quietly and slip noose over its head. Then draw easily, tightening the wire, and keep pulling steadily until the skunk is dead. Another way is to have a noose on the end of a long string; with a forked stick slip this over the head of the skunk then pass string over the branch of a tree and pull until the animal's feet are clear of the ground. Tie string to another tree and leave animal until strangled.

The Raccoon

The Coon is distributed generally over the forested parts of North America. It is quite common in the South and on the Pacific coast. I have not made its acquaintance on the prairies. In the South, coon hunting with dogs is a favorite sport and usually takes place by moonlight. It is rather a pretty animal and resembles in form a small bear, with the exception of its tail which constitutes about one-third of its entire length and is ringed with white and has a black tip. The general color of the raccoon is dark grey, some specimens being almost black. Its food is varied and consists of fish, frogs, insects, clams, vegetables and often poultry. Where corn is grown extensively it is very fond of pillaging the fields. It has the peculiar habit of washing its food when near water.

A good method of trapping the coon is to place something bright on the pan of the trap, a piece of tin or better still, the tinfoil that comes with certain makes of cigarettes, etc. Another good way is to place a No. 2 trap in about two inches of water and then place the bait on a stick in the water some distance from it. Bait may be fish, frog, poultry or anything of a like nature. Some trappers claim it is best to hang the bait over the trap.

Lures and Scents

In addition to the baits which have been mentioned in the trapping of various animals, which consist mainly of the foods of which these animals are fond, trappers use various substances which

from their peculiar and at times powerful odor are very attractive to the various animals on which they are used.

Foremost among these is the secretion which is found in the glands which are situated beneath the tail of the beaver. These glands in this case are four in number, and containing two different substances called by trappers, Bark Musk and Oil Musk. The bark has a commercial value and is known in the trade as Castoreum. These two substances are mixed together by trappers and are decidedly attractive to beaver. A great many fur bearing animals possess these glands and each is very attractive to the same species.

Fish oil is another great attraction. It is made by cutting up small pieces of fish and placing them in a bottle which is corked and placed in the sun for a week or two to ripen. This oil is especially attractive for mink when mixed with the secretion from the glands of that animal. A few drops should be placed under the pan of the trap.

A scent is as a rule used on the kind of animal from which it is taken. The urine of any female mixed with musk and anise oil will draw the male of that particular species. This should be placed in a bottle and tightly corked.

Iodoform is a good trail scent for marten. It should be dusted on a rabbit or squirrel and trailed behind the trapper. Asafoetida is also a great lure. This drug comes from Persia and is obtained from a plant. It is a powerful evil-smelling substance. The oils of Anise and Rhodium are also very good. In addition there are numerous lures and scents

prepared by dealers which are all more or less good.

The Handling of Furs and Pelts

No small portion of the disappointment which is at times experienced by trappers at the seemingly low returns for their furs is in a measure due to careless handling on their own part.

All animals should be skinned as soon as possible after they are caught. They may be allowed

Fig. 1

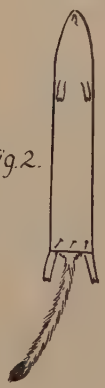


Fig. 2.

Fig. 3.

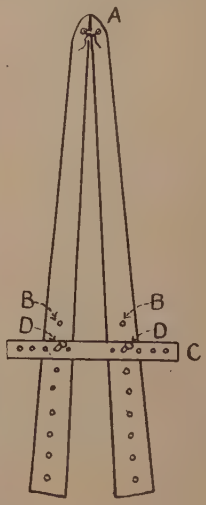


Fig. 4.

to freeze during cold weather but must not be allowed to alternately thaw and freeze.

Weasel, rat, mink, marten, skunk, otter, fisher, fox and prairie wolf are left cased, that is, the skin is taken off in the form of an envelope. With the exceptions that will be noted later, proceed as follows:

Cut the skin around the wrist and ankles with a sharp knife and then make a cut up the back of the hind legs to the root of the tail. Sever bone of tail where it joins the body and then turn skin back until the head is reached. Be careful in cutting around ears, eyes, nose, etc. The bone of the tail must be removed. To do this start it by skinning easily a little way with the knife and then placing between two sticks with a notch cut in them. Tail should then draw quite readily, either by a pair of pincers or by tying a piece of string to the root in the case of the larger animals.

The skin must then be stretched. Fig. 1, shows a muskrat stretched on a single cut to shape. Fig. 2 shows a weasel stretched in a similar manner; note the difference in shape. Mink and marten skins may also be stretched in the same manner, or if preferred, a stretcher may be made in three pieces as shown in Fig. 3. Another good one is shown in Fig. 4 and may be made any size up to that of an otter, which is the largest animal that is stretched in this manner. This stretcher is very simple of construction and of two pieces of planed board about three inches wide and tapered at one end. A hole is then bored in this end and the two pieces tied loosely with string, A. A number of holes are now bored as shown, B. B. Another piece of board with holes is seen in C, then with two pegs, D. D., it can be extended to any width or length required.

Skins when stretched should have all surplus fat and flesh removed by scraping. Care must be taken however not to overdo the process or you will injure the hair cells and when the skin is tanned

there will be as much hair on the inside as the other. Skins should always be dried in the shade. In the case of very fatty skins, a little warmth is permissible to help remove the fat. Never place a skin in the sun to dry. If fat is not removed skins become what is known as grease burnt and fall to pieces in the tanning.

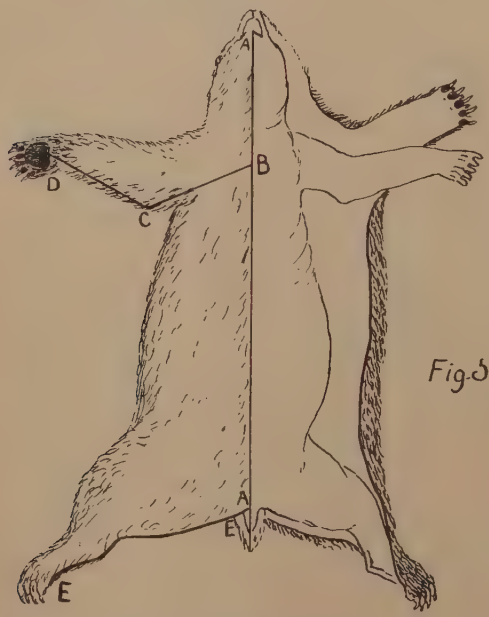


Fig. 5

The tails of rats and beaver being devoid of fur are useless and can be therefore cut off and dispensed with. The feet of foxes are better left on. This is also the case with the best of coyotes, as they are sometimes used for fur rugs and a taxidermist at any rate will always pay more for a limited number of perfect skins.

The skins of weasel, mink, skunk, otter and rat are left skin side out. Marten, fisher, fox, wolf and lynx are turned when not quite dry and shipped fur side out.

The skins of beaver are stretched flat and are almost circular in shape. Raccoon are also stretched flat.

Larger animals are skinned as shown in Fig. 5. It is best to proceed as follows: The first cut is made from a point three inches behind the chin to the tip of the tail A.A. Make another from a point between the forelegs, B. across to the first joint, C., and down the back of the leg and around the pad or sole of the foot, D. The other foreleg is cut in a like manner. Another cut is now made from the root of the tail down the back of the hind leg and the pad treated as before, E. E. Now proceed with the skinning, taking care to leave as little fat on the hide as possible. Care must be taken to sever the toes at the last joint. If this is not attended to the hair will loosen around the claws and come out.

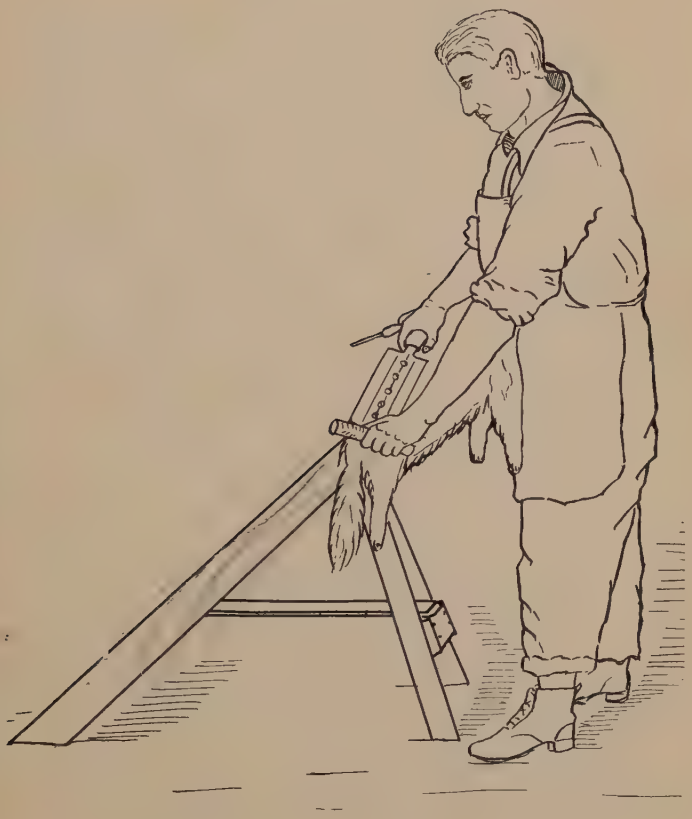
When the head is reached care must be taken not to cut or disfigure the ears, eyes, nose, lips, etc., and the ears had better be skinned out, that is, the skin loosened from the back of the cartilage and the ear turned inside out. The skin must now be stretched by lacing to poles or by nailing to a wall or fence, in the shade of course. All surplus fat and flesh must now be removed.

The reason for all this care around the feet and head is that as most large animals are made into fur rugs and robes, and in the majority of cases the head and feet mounted, it stands to reason that

they will command a higher price. It is a good plan if there is time to save the skull of such animals as in the hands of a taxidermist they are far superior to the artificial ones. I have often paid more than market price to get a skin of a bear, wolf or cougar in this shape, and those not in the business would be surprised to learn how small a percentage of skins are in really good shape.

It seems needless to add that on no account should fur be trapped except when prime. To take seasonally valueless fur is both to waste the trapper's time and the natural resources of the country.

TANNING



TANNING

TANNING is a process by which the hides and skins of various animals are changed by chemical action into leather. There are two distinct branches of this work which are known under the general term of tanning.

The first process to which the name tanning is often wrongly applied, is known as tawing, this includes the preparation of white leather by the action of such mineral substances as salt, alum, sulphuric acid, etc. Fur skins are always tanned by this process likewise the leathers which go to make kid gloves, moccasins and chamois. The second consists of the treatment, by immersion of hides in solutions containing tannic acid in various proportions. The leather produced by this process is used in the manufacture of shoes, harness and belts.

Tanning in all its branches entails a great deal of manual labor. There is no substance known that can be placed upon a hide that will turn it into leather without such labor, this is especially true of tawing or white leather dressing.

The tools which are required to successfully dress skins are few in number and not very expensive. A good skinning knife (Fig. 1), a fleshing knife (Fig. 4), and a currier's knife (Fig. 5). Two steels are necessary with this knife, the smaller one (Fig. 2) to keep the turned edge keen, and the large one (Fig. 3) to turn the edge of the blade.

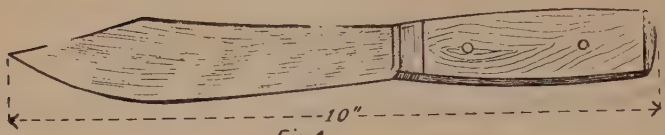


Fig 1

Fig 2

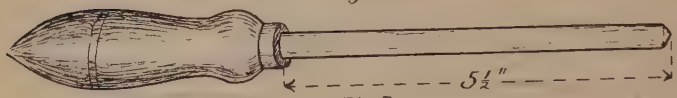


Fig 3

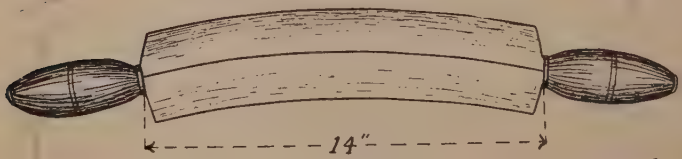


Fig 4

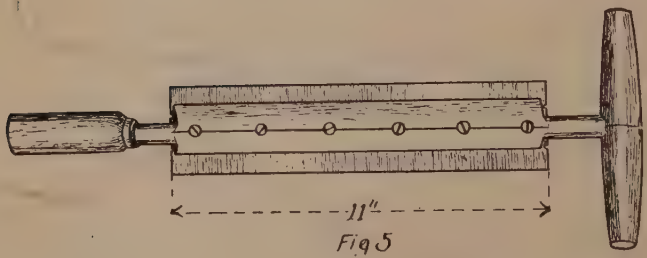


Fig 5

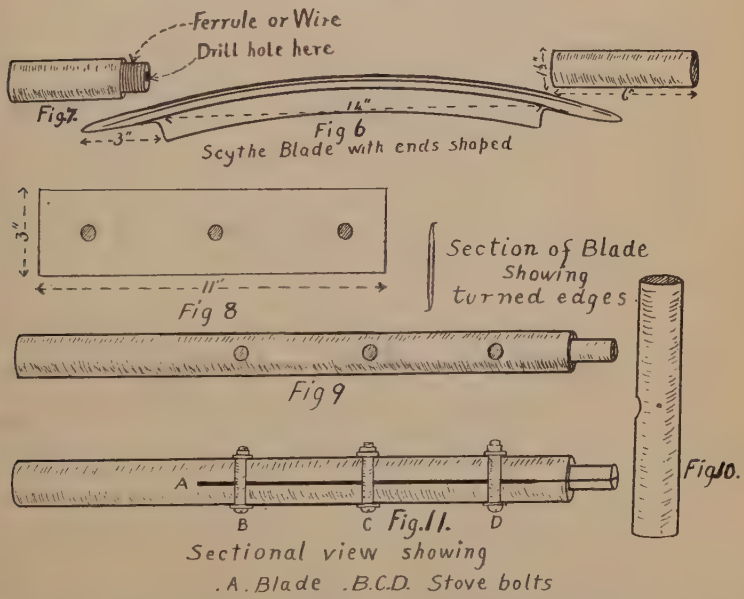
Although I am an advocate of good tools for good work, it is not always advisable to incur the expense of such unless the quantity of work demands it.

By careful attention to the working details in the illustrations anyone possessed of a little ability

and ingenuity can make some very serviceable tools which will take the place of those which may be purchased ready made.

Some Home-Made Tools

To make a fleshing knife, procure a piece of an old scythe-blade 20 inches long and have the local blacksmith shape the ends so that they can be inserted in the handles (Fig. 6). If you have a forge of your own, so much the better. Do not heat any more of the ends than is necessary in this operation



as it will interfere with the temper of the metal. Next procure two pieces of round hardwood 6 inches long and 1½ inches in diameter and bore a hole

slightly smaller than the ends of the blade into them to the depth of 3 inches. These handles should first be bound with wire or a ferrule placed on the end, this prevents them splitting during the drilling or at any future time (Fig. 7).

To make a currier's knife, illustrated by Fig. 5, Plate 1, a piece of an old saw blade is secured 11 inches by 3 inches, this should be ground down until it is perfectly rectangular in form, as it is much better to have two cutting edges. This should be ground to a razor edge both sides being ground equally and well back. Previously have three holes punched along the center of this blade (Fig. 8, Plate 2), next procure a tough hardwood stick 1½ inches in diameter and 20 inches long, (Fig. 9) and another piece 9 inches long and the same diameter. Next with a brace and ¾ inch bit bore a hole through the centre of the 9 inch piece, (Fig. 10). Cut down the end of the 20 inch piece to ¾ inch diameter and 1½ inches from the end. With a saw make a cut straight down the center to within 6 inches of the uncut end. The small piece is now fixed to the end and fastened by means of a very fine screw or riveted with a piece of copper wire. Next drill three holes to correspond with those in the blade. Insert the blade and fasten with short stove bolts and washers, (Fig. 11). The edge of the blade must now be turned over. This is done with the large steel. Place the knife in a vise and by an even pressure, starting well back, gradually turn about one sixteenth of an inch of the blade at right angles to the rest (Fig. 8). When completed the knife should vary little in appearance and utility from the best currier's knife obtainable. A small

finger steel can be made from a stout knitting needle. Make careful note of the shape of the point. The handle also is tapered toward the top so that it may be held between the fingers whilst using the knife. The purpose of this steel is to keep the turned edge keen by drawing it alternately back and forth. This is the reason for the shape of the point, that it may readily be drawn along the inner edge.

A turning steel can be made from an old rat tail file ground down quite smooth. Be sure of this, otherwise you will strip the edge when you start to turn. Should you be willing to spend the necessary time you can make a first class skinning knife of an old flat file ground down to the desired shape. A very good fleshing knife can be adapted from an ordinary carpenter's draw-knife, one with adjustable handles is the best. A common one will do providing the handles are straightened out (Fig. 12). This is used in the same manner as the other fleshing knife. I have found it very useful around such places as the eyes, nose and lips of hides where it is desirable to mount the head.

Fig 12

Adjustable draw-knife in shape for fleshing

Before we proceed with the work, it might be as well to explain that much of the manual labor connected with tanning is overcome in factories with the aid of machinery and various other devices. As

many farmers now possess a motor for use in pumping, washing, churning, etc., and also as some of the contrivances used in fur dressing are not difficult nor expensive to construct it seems to be better to explain to the reader the methods used in a small plant which I once operated in connection with my other business of taxidermy. Some of the readers who are fortunate enough to have access to, or own a small motor and can obtain sufficient work in this line, will then be able to earn quite a little with this as a side line, while others will be able from the explanation, to devise various methods of doing the work by hand. For the benefit of all I will try and explain both methods as we proceed.

In commencing any tanning process the first step is to prepare the skin for fleshing. Fresh skins are better salted for a day or so and rolled up, flesh side in. This makes them flesh better. After this is done the salt is washed out in clear, soft water, the skin drained and the surplus water beamed out before applying the tan. Dried skins may be soaked in soft water until they are softened in every place, then drained, beamed out and fleshed. If there is any danger of the hair slipping or coming out through improper handling in the first place, they had better be laid on the floor, hair side down, and covered with wet sawdust on the flesh side. This will prevent the roots of the hair from being wet, and may save the skin from spoiling. In all cases soak hides where possible.

For coloring fish you will require additional colors. The following list I have found most useful, and for convenience I have divided them into two classes, the opaque and the transparent:

Opaque	Transparent
Flake white	Crimson alazarin
Zinc white	Purple lake
Naples yellow	Prussian blue
Chrome yellow (light, med., orange)	Brown pink
Cadmium yellow (pale or deep)	Aureolin
Yellow ochre	Gamboge
Light red	Bitumen
Raw umber	
Burnt umber	Olive green
Vandyke brown	Semi transparent
Ivory black	Burnt sienna
Vermilion	Terra Verte
Cobalt blue	

In coloring fish the most important thing to remember is to use as little color as possible. The white of the belly is better put on in two thin coats in preference to one heavy one which will destroy the demarcation of the scales.

When blending a transparent with an opaque color, as in the case of the jack-fish, where the white of the under parts joins and blends with the greenish tone on the sides, try and do it quickly and with as little mussing as possible, otherwise your work will have a muddy appearance.

With the exception of the under parts, transparent colors only should be used on scaly fish. Where

there is a silvery or golden appearance, it can be imitated by using nickel or gold leaf as the case may require.

Gold size is applied to the parts, and when it is just a little sticky to the touch the leaf is applied. Experience only will teach the right method of using this material which is put on first and the color applied afterwards.

In coloring casts and models of fish, they are first given two coats of thin white shellac and then a coat of nickel leaf. In cases where the scales are not sharply defined each scale is lined with a very fine sable brush. The tone used in shading the scales is a grey composed of cobalt blue and light red. Coloring models of fish is a tedious process; I have spent several days on one fish but the effect is worth it. The fish is then tinted over same as the mounted specimen.

The best way to paint the bare skin of mammals, the wattles of some birds, etc., is to color them with oil colors mixed with turpentine and afterwards blend them with powder color of the same shade while the paint is wet.

To Paint a Glass Eye

Most glass eyes are purchased already colored. Flint eyes are sold for special purposes, these have the black pupil and the rest is transparent. They are painted on the back with oil colors mixed with Damar varnish. Most eyes are delicately veined, these veins are painted on first with a fine artist's sable brush, and the ground color put on after they are dry. In the case of fishes there is usually a gold

The Fleshing Beam

After purchasing or constructing the tools previously mentioned, the next thing necessary will be a beam, on which to flesh the skins. For all work except large hides it is best constructed as shown in Fig. 13. The size of this beam can be altered

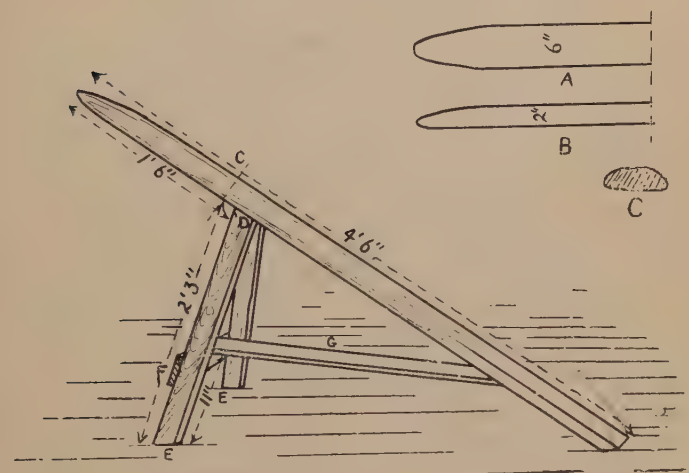


Fig 13

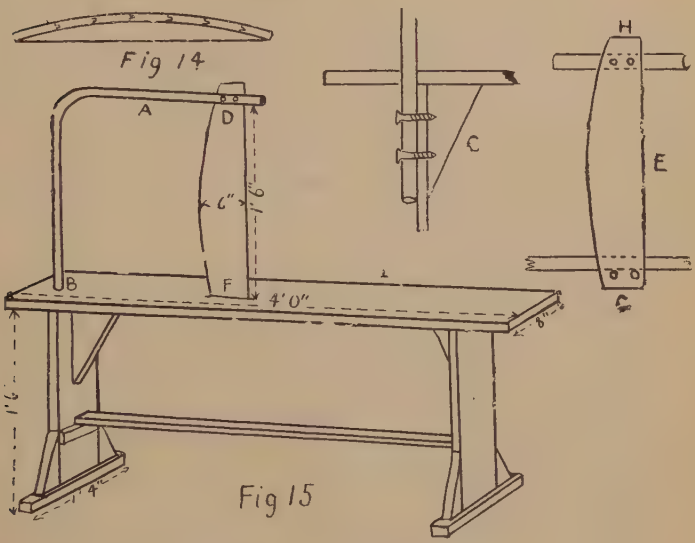
to suit the height of the person using it. The measurements given are all right for a person 5 feet 8 inches in height or thereabouts. To proceed, first secure a piece of hardwood plank, the closer the grain the better. This plank should be 2 inches by 6 inches by 4 feet 6 inches long, and the upper surface should be rounded almost its entire length. C shows how it should look in section at the place indicated by the dotted lines. It should also be pointed somewhat as shown by the top view

A and the side view B. The advantage of this will be seen when fleshing down the heads and feet of skins that have to be afterward mounted by taxidermic methods.

Next fasten a short piece of wood 4 inches in length to the underside at the point marked D. This should be 1 foot 6 inches from the end. To this fasten the two legs E.E. 2 feet 3 inches long, and about 11 inches from the floor fasten a cross piece F. From this cross piece secure a stay as shown at G. All pieces must be firmly fixed with wood screws (not nails) and care should be taken that the ends of screws do not come near the upper surface of the beam, which must be perfectly smooth as the slightest unevenness will cause you to cut holes in the skin. The method of using the knife is shown on page 61. It must be held at a certain angle to work properly. This will be acquired by practice. It is pushed from the operator with a downward and slightly sideward motion. You will no doubt cut quite a number of holes before you get the hang of it. It would be advisable, therefore, to practice on some inexpensive hide to begin with. In place of the plank specified the beam may be made of a hardwood pole or a slab, the weight of the pole being in some respects an advantage in keeping the beam in place when working.

For larger hides a beam is made in exactly the same manner, the only difference being that it must be from 16 inches to 20 inches wide and not pointed at the end. It can be made from a large slab, a piece of wide plank, or from pieces of narrow hardwood flooring screwed to cleats as shown in Fig. 14.

The screws must be counter-sunk, the holes filled and the joints smoothed off.



Fleshing Smaller Skins

The skins of muskrat, weasel, mink, marten and animals of a similar size are fleshed in a different manner. A bench should be constructed of 1 inch boards to the measurements given in Fig. 15. If desired the top can be of 2 inch plank and it may also be fitted with legs instead of the standards shown. When this is completed a piece of 1 inch iron pipe should be bent to the shape shown in A. Drill a hole in the bench at B and push the pipe through and fix as shown in the detail C. Two holes are drilled in the pipe for this purpose, two holes are also drilled at D and the end of the pipe

split with a hack-saw. A knife should then be secured and drilled as shown in detail E. A piece of old saw blade will do for this. A cut should be made in the top of the bench at F by first drilling a hole and then making the cut with a pad-screw. The end of the blade G is now placed through this and retained by two bolts, and the other end H is fixed to the slit in the pipe also with two short bolts. The whole is adjusted so that the blade is taut. The blade must also be sharpened on the rounded edge previous to being fixed.

To flesh small skins in this manner the operator sits on the bench on the position marked I with one leg on each side and facing the back of the knife,

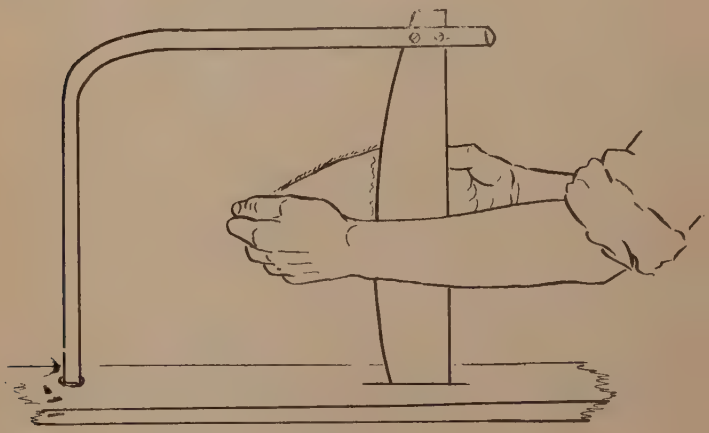


Fig. 16.

passing the skin across the blade by drawing it with the right hand. The secret is to get the flesh and tissue that is to be removed, properly started, it then comes off readily. A skilled professional will

remove the flesh on a rat in two strokes. If the novice tries to do this he will cut the skin in two. It is better to go easy at first. Fig. 16 shows the method of holding the skin. If you have only a few skins to do you can manage by placing the draw-knife upright in a vise, and drawing the skins over the edge in the same manner. In fleshing, while it is essential to get the skin as thin as possible, it must not be overdone, as if you cut too deep you will injure the roots of the hair and in the processes to follow it will either come right out or you will have as much hair on the inside as you do on the other. After being properly fleshed, the hides should be stretched on the floor, flesh side up, and swabbed over with a strong salt and sulphuric acid pickle, Taxidermy Formula No. 3. These ought to be left overnight and next morning swabbed again and rolled up, flesh side in. Repeat the next evening, and the following morning the skins should be hung up in a room with a temperature of about 100 degrees to dry. During this process do not allow them to dry thoroughly in any place. They should be taken out and beamed and broken or stretched every way until the whole skin is quite white and slightly moist and pliable all over. Then brush over with Neatsfoot oil, which penetrates quickly through the skin. In this condition they should be placed in a drum with hardwood sawdust and rotated for several hours.

A Home-made Revolving Drum

It is well to give here a description of this drum and a means of adapting it to the use of the ama-

teur. The first drum we possessed was five feet in diameter and two feet six across.

Fig. 17 is a drawing of this drum, with the side taken out as it were, to show the interior fittings.

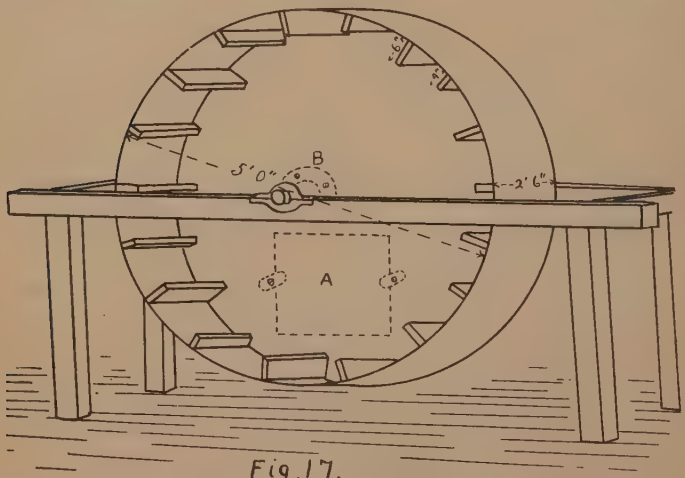


Fig. 17.

The circular sides were constructed of lumber well countered and with a door in one side as indicated by the dotted line at A. These sides were then fixed together with pieces of lumber alternately 6 inches and 4 inches wide as shown, the drum being then similar to a paddle wheel. A strip of strong galvanized iron was then fixed firmly around these paddles and sides with wood screws. The shafting did not extend through the drum but was fixed on the outside with plates as indicated by the dotted lines at B. The reason for having the inside of the drum free from shafting is so that the skins and sawdust, after being carried well to the top of the drum by the paddles, can fall with greater

force. This is essential for the proper breaking and cleaning of the skins.

The drum is raised about one foot from the floor as shown, and the shafting set in bearings. One end of this shafting was squared to fit a handle and the drum was then started slowly by hand. A pan containing burning charcoal was kept under the drum to supply the necessary heat when in operation. The whole arrangement was firmly fixed and braced and the galvanized iron especially was firmly screwed to the woodwork to prevent it from loosening with the constant pounding of the falling skins and sawdust. After being thoroughly cleaned and softened in the drum the skins were taken out and the sawdust beaten out with strong canes, and the fur combed and brushed into shape.

This entailed a lot of real hard work, so as soon as we were financially able we attached the drum to an electric motor with belt, pulleys, etc., and in addition constructed what is known as a cage, which is really another drum, constructed in exactly the same manner, with the exception that, in place of the galvanized iron it was encircled with heavy square 1 inch wire mesh. After being taken from the first drum, and the bulk of sawdust shaken out, the skins were placed in this cage which was then rotated. The pulleys being so arranged that the drum turned very slowly, allowing the skins to drop at each revolution, the sawdust dropping through the mesh to the floor beneath. This was continued until the furs were thoroughly cleaned. Needless to state there was no fire under this latter drum or cage. When taken out all that was necessary to complete the job was a light combing and beating.

Those who already possess a motor and can get sufficient of this work, would do well to construct such drums, and even if you have not a motor you can make a smaller drum to turn by hand: of course the taller the drum is the better, so much depending on the drop of the skins, etc. In some establishments they are ten feet in height. The one we constructed 5 feet high was some job for a husky man to turn for any length of time.

The Armstrong Method

Should you find it necessary to do all the work by hand, proceed as follows: First flesh the skin

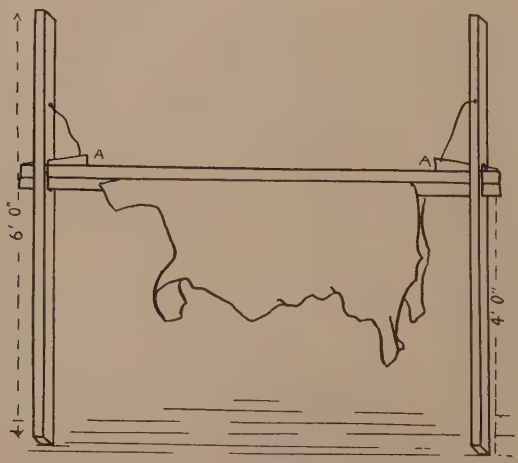


Fig. 18.

thoroughly as described, either by immersion of the hide in a tub or vat containing the liquor or by swabbing it on, or by applying in waste or powder form. Next hang the skin up to dry in the

shade, and during the drying keep it thoroughly stretched and broken. The whole secret of success is to see that it does not become dry in any place until properly broken.

Large skins are worked over the beam with the knives, and small ones can be well broken by rubbing them over the edge of the knife as shown for fleshing in Fig. 16, or an old scythe blade may be placed in a vise and the skins worked over this. Another excellent device for breaking and stretching large skins is the Tanners Stretching Frame, Fig. 18. To make this, secure four pieces of 2x4 lumber six feet long and cut a mortise in two of them 4 feet from one end, and about 2 inches by 9 inches. This is to take the two cross pieces. Now cut two wedges AA and attach them with string to the uprights as shown. The hide is placed between the cross pieces and held in place with the wedges, the bottom cross piece is usually fixed in place with screws, but where there is not too much room it is better left loose, the frame can then be taken to pieces and put away in much smaller space when not in use.

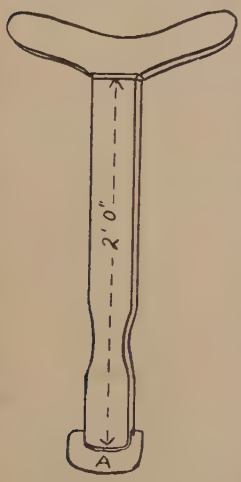


Fig. 19.

The breaking is usually done with a moon knife which is a circular steel blade attached to a crutch. A more simply constructed stake knife can be made as shown in Fig. 19. It consists of a

crutch to fit the arm and a piece of 1 inch board two feet long, and four inches wide. About six inches from the lower end it is shaped to fit the hand and a piece of steel is fitted into a saw cut in the end as shown A. The stick is mortised into the crutch to make the right arm, and the stick grasped at B. The edge of the skin being now grasped with the left hand, the skin is stretched by pressure with the steel A. The frame is leaned against a wall during this work.

Some Tanning Preparations

Having described to the best of my ability the various devices used in dressing fur skins and white leather there remains but to give the few necessary formulas which I have successfully used.

The solution most extensively used in fur dressing is formula 3 (Taxidermy). Skins may be left in this solution anywhere from 2 days to a year or more, the longer they stay the better will be the tan. When this is used as a swab as directed previously, half the quantity of water should be used and the same amount of sulphuric acid and salt.

If the skins are to be finished entirely by hand they should be gone over on the flesh side when not quite dry with a little good coal oil instead of neatsfoot oil. If they are to be drummed, neatsfoot oil will be best. In all cases they must be thoroughly stretched, broken, and worked until quite dry.

In the Encyclopedia Britannica (ninth edition) is an article on Tanning. A system given there, which I will quote, I have successfully adapted to the dressing of skins by hand.

The quotation is as follows:—

"The tanning itself is accomplished in a drum or cylinder the same as a tanner's stuffing wheel, into which is introduced for one hundred average skins a mixture consisting of 20 pounds of alum, 9 pounds of salt, 40 pounds of flour, 250 eggs (or about 1 1/3 gallons of egg yolk, 7/8 pint of olive oil and 12 to 16 gallons of water. In this mixture at a temperature of not more than 100° F. the skins are worked for about 40 minutes, by which action the tanning is completed. After withdrawal from the drum the skins are allowed to drain, dried rapidly by artificial heat, damped, staked out by drawing them over a blunt steel tool, and then wetted and shaved down on the beam to the required thickness. Next they receive, if necessary, a second treatment with the tanning mixture."

I find that by reducing the quantities to the following and omitting the water excellent results are obtained.

Alum ½ lb.
Salt ¼ lb.
Flour 1 lb.
Eggs 6 lbs.
Olive oil 3 teaspoons.

Mix to a thick paste with a little vinegar, and apply to flesh side of skin. Break, dry and stretch as usual.

An excellent leather may be obtained by mixing the above ingredients with about two quarts of water and immersing the skin. If necessary to make a larger quantity mix in proportion. Leave skin in two or three days, according to thickness. take out, hang up, dry, beam, etc.

One of the most simple methods is to mix together 1 pound of alum and 2 pounds of salt and pound it to a fine powder. After the hide has been thoroughly fleshed, rub this into the flesh side and roll the hide up flesh side in. Repeat this the next day and then hang the hide up to dry. Keep the hide thoroughly broken and stretched during the drying. One ounce of saltpeter added to the above ingredients will cause the tan to penetrate better. This is good for hides up to the size of a sheep or calf.

For larger hides it is better to make a pickle by boiling the above ingredients in 5 quarts of water, and then immersing the hides following the directions given in Making Robes. With these recipes you can successfully tan any kind of skins. The two main things to remember are — have the skin thoroughly fleshed, — don't allow the skin to dry out until thoroughly broken.

Making Horse, Cow and Sheep Hide Robes

If the hide is fresh it must first be salted on the flesh side and rolled up for a couple of days. Dry hides need to be soaked until quite soft.

The next process is fleshing. The salted hide is all right for this operation without further preparation. The dried hide after being soaked in water is drained thoroughly. They are then placed in the beam and every particle of flesh, fat, etc., is removed with the currier's knife. Unless this is attended to thoroughly you will not be able to make a good job of tanning the hide

It is next washed in clean water and soap and after being thoroughly drained and placed in the

tan liquor (formula 3, Chapter on Taxidermy), it is stirred and turned every day until tanned. The time required will vary according to the hide, three or four days for a calf or sheep, and as much as two weeks for a horse or cow hide. When tanned it is taken out, drained, and washed again quickly in soap and water. The surplus water is then beamed out and the hide hung up to dry. As soon as a dry place appears it is pulled and stretched in every direction. No part of the hide is ever allowed to become dry, during the breaking. When thoroughly broken in every place and still damp to the touch, brush over the flesh side with kerosene or coal oil and break again. Repeat this operation as often as necessary, three or four times in the case of a large hide. When thoroughly tanned and pliable it is ready for the lining.

First proceed to repair all holes by the methods described in Rug Making, Chapter on Taxidermy, and then proceed to stretch the hide. This stretching is necessary in most cases on account of the fact that few hides will lay flat after being tanned, and are very difficult to line in this shape. It is advisable, therefore, to dampen the hide on the flesh side with warm water, and proceed to stretch it out on the floor or some suitable place (fur side up). Endeavor to work out every wrinkle and fold. It sometimes happens that there is still a fold in the flanks which no amount of stretching will take out. In this case this portion must be cut out and the edges of the cut sewn neatly together. The hide is held in place with small nails about three inches apart and driven in just enough to hold. When the hide is dry the nails are taken out and it is then

trimmed to the desired shape. If the hide has stiffened it is rubbed soft again, by working over the beam or stretching frame lightly.

Robes are usually made with a double border of scalloped or pinked felt. Directions for making this will also be found in Rug Making (Chapter on Taxidermy). This is sewn to the edge of the hide, being gathered neatly at the corners to allow it to turn properly. If a good warm robe is desired it is better to interline with sheet cotton-batting. For a lining it is better to use a heavy blanket, plushette, or heavy blanket cloth. This is sewn to the felt edging close to the hide. If the robe is large it had better have several buttons of cloth sewn on the lining side and through the hide. This will hold the robe in better shape.

Tanning Leather

After soaking and fleshing the hide, as directed on page 73, it is ready for the lime. Following will be given ways for loosening fur, hair or wool. To keep hair or wool clean when taking it from hides take equal parts of hard wood ashes and slacked lime and make them into paste with soft water. Spread this on the flesh side of the skin, then fold flesh side together, roll it up and put in a tub, just covering it with water.

It should remain 10 days or until the hair comes out easily, then take to the fleshing beam and scrape off the hair. The currying knife shown in Fig. 14 is best for this purpose.

To loosen fur, hair or wool take eight quarts of slacked lime, add 10 gallons of soft water; then stir in nine quarts of hard wood ashes. Stir this

liquid thoroughly and immerse the skins, which should be covered with the liquid. Let them soak three hours, then hang over the tub a few minutes to drain. Do this four times the first day, three times the second day and once a day until the hair starts on the thickest part, then rinse in clean water and scrape off the hair.

After the hair is taken off put the hide in clean water and let it soak half a day. Next let soak four hours in a liquid proportioned as follows: 24 quarts of soft water and eight quarts of sharp cider vinegar. Make only as much as is needed and throw away when done with it, as it is no good for future use. After soaking put the hides in soft water and scrape them on the fleshing beam three times in three days, removing all the fine hair. They are then ready for the tan liquor.

Several ways of tanning are given, but hides should be treated as above directed until ready for the tan.

The Complete Process

Take 32 quarts of Mayweed and bark liquor,[1] 1 ounce of pulverized alum, 1 ounce of pulverized salt, ¼ ounce of saltpeter, 3 pounds of Terra Japonica. Dissolve the Japonica in water before putting it in. Stir well until all is dissolved, then put in the hides and let them soak one day, occasionally pulling them out and working with the hands. During the first

[1] **How to Get Bark Liquor for Tanning.**—Break the barks, shrubs, herbs and plants into small pieces and put them into a large kettle or boiler, cover with water and let steep until the strength comes out of the barks. It matters not about the amount of each kind as long as you have some of each, but have enough of all together to make good strong liquor. When using bark liquor for tanning if it gets weak put it back into the boiler with the barks and herbs and let steep again. When Japonica liquor gets weak put in more Japonica. The way to make Japonica liquor is to break it up fine and put it into the amount of water you need, then stir until dissolved

day make a liquid by steeping Tansy, Smartweed, Spearmint, Sweet-fern and barks, make 40 gallons of this and then put into it dissolved 1 ounce of alum and 1 ounce of salt. The second day put the hides into this liquid and haul them out two or three times. Next day put the hides back into the Japonica liquor. Change them this way from one tub to the other every day until tanned, letting them hang up each time long enough to drain. If smaller quantities are required reduce all ingredients in proportion.

If Mayweed is not obtainable you can use Smartweed, Tansy, Sweet-fern and Spearmint in its place, either separately or all together; and if you can not get any of the above named herbs and plants for the second, or 40 gallons liquid, you may use two pounds of Terra Japonica and one pound of extract of Hemlock. If you use the Japonica and Hemlock make 40 gallons of it and then put in the alum and salt same as with the herbs and plants.

The above liquor should be strengthened occasionally by adding Japonica to the Japonica liquor and returning the bark liquor into leach for more strength. If the liquors are weak the leather will be poor. Hides in weak liquor grow slippery while those in strong liquor feel rough to the hands on the grain side.

When these hides are tanned hang them up to drain; then lay on the table and oil the grain side with any suitable oil, as Neat's-foot, tanner's oil, and hang in the shade to dry. Dip them in water so as to make them just damp enough for skiving, after which scour well. Skiving is the term used by professionals to describe a process which resem-

bles the first fleshing and which reduces all unevenness in the thickness of the leather.

Scouring

To scour the hides put them in a tub of water then lay on table, flesh side up; take a stiff brush and apply it faithfully to the leather, then sleek the water and filth off with an iron sleek. Dip in water again and lay on the table, grain side up, (grain side means, side hair was on) and apply brush as before; then apply stone sleek faithfully to work down every wrinkle. With a cup throw water over the leather and finish scouring by applying the brush and iron sleek, sleeking the water out as dry as possible. The next thing to do is to stuff the leather with stuffing proportioned as follows: Make four pounds of beef tallow hot and pour it into six quarts of tanner's oil, stir occasionally; when nearly cold stir into it two gills best kerosene oil. Just before stuffing the leather, oil the grain side, put oiled side on the table and then with an iron sleek, sleek down the leather every way smoothly. Then with a soft brush apply the stuffing evenly over the flesh side, leaving it one-third as thick as the leather. Take a bunch of horse hair, mane or tail, and rub off every particle of stuffing from the grain of the leather. Next take it on the whitening beam and with the whitening knife take a shaving from every part of the flesh side, making it completely smooth. This can be done with good sharp sleek on table. Then sleek off the grain with stone sleek. Next lay the leather on the table, flesh side down, and commence at one corner of the leather with grain board

in right hand, and grain or bowl the leather diagonally across two ways. The tool used for this purpose is a flat piece of board about 5 inches by 10 inches with a strap across the back in which to place the hand, after the manner of a circular curry comb. Its working surface is corrugated across the short way. The leather is now ready for the Blacking.

Put the leather on the table, and with a stiff brush apply faithfully to the flesh side the blacking, proportioned as follows: two quarts of tanner's oil, one ounce of lamp black, stir well, then stir into this half pint Japonica liquor. After this blacking has dried, rub the blacked side over with a clean woolen cloth to remove all loose particles; and with a soft brush apply evenly a paste made as follows: Two quarts boiling rain water, a few shavings of hard soap and two-thirds pint of thickening made of fine flour and soft water well stirred in; let it boil a few minutes, then let it cool; stir into this paste ¼ as much melted Gum Tragacanth. When this paste is dried into the leather, take it on the table and sleek the black side over with a sharp glass sleek. Then make another paste same as first only stir in twice as much gum as the first, put it on with a fine sponge. When dry, sleek to finish with glass sleek. This completes the finish on the flesh side.

Grain Blacking

Put into an iron vessel a quantity of old iron; then put 4 ounces of extract logwood into a gallon of sharp cider vinegar, dissolve over a slow fire; when dissolved pour it into the old iron and cover tight; the longer it stands the better it is. When

blacking is wanted, set a deep stone jar in an open room and put in 4 ounces copperas, and 2 ounces logwood; then pour in aquafortis enough to dissolve the copperas and logwood; immediately cover tight, and when dissolved put it into 2 quarts of the vinegar from the old iron. Next heat and keep hot a quantity of zeig; apply the hot zeig with a stiff brush to the grain of the leather and when moistened enough, apply the blacking with a brush. When nearly dry set the blacking down smoothly with a stone sleek; then with an iron sleek remove all the stuffing from the flesh side, and with old woolen cloths clean the blackened side of smut; stuff with hot tallow the blacked side and hang up to dry. When dry sleek the tallow from the blacked side and to finish, polish by applying old woolen rags with energy. If the work has been done as directed, no better leather was ever made than you have just completed.

A Shorter Process

Take 12 ounces of salt; 2 ounces saltpetre; 3 pounds Terra Japonica. Dissolve the above articles in water, and put it into 8 quarts of whey; stir well, then pour in 4 ounces of Sulphuric Acid. Stir thoroughly, in this liquid immerse the skins. Handle well, and strengthen the liquor when necessary. Always use the same proportions when making more or less liquid. Thin skins will tan in a few days; heavier skins up to fifteen days. When tanned finish as above directed.

A Thirty to Sixty Day Process

The amount given is for a 12-pound calf skin: Put in a copper kettle (if you haven't copper, tin will do) with 20 quarts water, 1 pound alum, 2 pounds salt, 3 pounds Terra Japonica, and dissolve without boiling. Put the skin in a tub and cover it with water, then put in one pint of the tan liquor and stir well. Add one pint of the liquor every night and morning for three days, stirring well every time; then put in all the liquor that remains. Handle the skin two or three times daily while tanning. You can continue to use the tanning liquid by adding half the quantity each time for any amount. Always keep same proportions.

If you wish to make dark leather put in one pound of Sicily Sumac. Horsehides for harness will require about 30 days, kip skins 20 days and calf skins from six to ten days at most. To make good mitten leather, leave out the Sicily Sumac and when tanned, scour or wash in water, then soak 40 minutes in real warm boiled oil hang up to dry and work while drying by pulling and rubbing with the hands. When dry it is ready for use.

Tanning Raw Hide in Twenty Minutes

Take 1½ pints Sulphuric Acid and pour it slowly into 1½ pints soft water (this amount for a common sized cow hide). Put the hide, flesh side up, on the table and thoroughly wet the flesh side with the acid and water by means of a cloth or sponge tied to a stick. Fold flesh sides together and let it stand only 20 minutes, having ready a solution of soda and water, one pound of soda to 16 quarts

of water, and let the skin soak in this 2 hours; then wash in clean water and apply a little dry salt, letting it lie in the salt 12 hours. Take to beam and remove all the flesh, and soak a few minutes in water, then sponge onto the flesh side, Neatsfoot oil, and hang up to dry; work well while drying. When dry it is ready for use.

Great care must be taken when pouring Sulphuric Acid into water or when allowing it to come into contact with certain soda compounds. When mixing sulphuric and water, have a container for the water deeper than what is needed to hold it actually. Then tip slightly and pour acid gently down the lower side of the container, stirring slowly meanwhile. Never pour water into acid nor acid directly on water. Acid and soda solutions should never be mixed but no violent reaction occurs if the above instructions are followed and the hide is first treated with one and then immersed in the other.

Deer Skins for Gloves

For each skin take 12 quarts of water and put into it one quart of lime; let the skin soak in this 3 or 4 days, then rinse in clean water and scrape off the hair. After scraping soak in cold water two days, and scour or pound in good soap suds half an hour; then take white vitrol, alum and salt; one tablespoon of each to a skin, dissolve them in enough water to cover and let the skin soak in this 24 hours, then wring out as dry as possible. When dry spread on with a brush, ½ pint tanner's oil and hang in the sun for 2 days. Next scour out the oil with soap suds and hang out again until perfectly dry;

then pull and rub the skin until soft. If a reasonable time does not make them soft, scour out again in suds until complete. The buff color is given by yellow ochre spread evenly over the skin and rubbed well with a brush.

Deer Skins for Graining

Make the skin perfectly soft by soaking, then prepare a weak lime as follows: 8 gallons soft water and 4 quarts slacked lime; stir thoroughly and immerse the skin. Handle well the first day; the second day handle twice; the third day take out and rinse in clean water. After rinsing take to beam and scrape off a narrow strip of the hide with the hair at every motion of the grain knife. After working all the grain off, soak them in equal parts of Citric Acid and soft water for one hour. Next throw the skin into soft water and work twice on beam, scraping the flesh side; the skin is then ready for the tan liquor as follows: Take the brains from two deer or hog's heads and put them into 8 quarts of tepid soft water, stir until dissolved (make enough of this liquid to cover the skin and keep the same proportions); immerse the skin, and let it soak for one hour, then hang in the shade to dry; when dry immerse again and let it soak half a day; then wring all the liquid out of them. Next run them over the stake knife every way to stretch, and hang up to dry. While drying pull every way to soften. Repeat the operation until tanned and soft, which will be about four times soaking. After the fourth or last wringing, while damp, sponge on a coat of kerosene oil. When dry

hang in a smoke house and smoke until the skin is a cream color. (For smoke, burn maple or birch punk or decayed wood.) To finish rub with pumice stone.

Glove Leather

Calf, dog, lamb, or cat skins for this purpose may be limed and haired same as given on page 83 or as follows:

Dissolve 1 pound of potash in 10 gallons of soft water, add to this 8 quarts slacked lime and 8 quarts hard wood ashes, stir well and immerse the skins. Handle constantly, for the wool will start within two hours; hair will start in from three to nine hours. After the wool or hair is taken off and the flesh all scraped off, handle in equal parts of sharp cider vinegar and water for two hours. Next soak in soft water and scrape each skin twice on the beam, when they are ready for the tan liquid as follows:

32 quarts soft water; 4 pounds Terra Japonica; 4 pounds Glauber salts; 4 pounds alum; 1 pound salt. Stir until all are dissolved. Handle well. The lamb skins will tan in one hour.

Removing Wool

Soak until very soft. Dissolve 2 ounces of potash in one gallon of soft water, and with this make a paste of equal parts of lime and hard wood ashes. Spread on the flesh side, roll flesh sides together and lay skin in damp place. Wool will start in two hours.

TAXIDERMY

TAXIDERMY

ALTHOUGH it is true that the curing of skins for clothing has been practiced from the most remote times, the art of Taxidermy is of comparatively recent origin. The mounting of birds and other animals in natural and lifelike positions has been extensively practiced only during the last century.

It has been left until even more recent times to elevate the art from its crude beginnings. By combining the efforts of the taxidermist, artist and modeller, some really great works have been executed in the best museums of America and Europe. In our own country we have the commencement of several museums, one at Victoria, B. C., being fairly complete. Wonderful as our North American wild life is, many species are in various stages of the process of extinction and it is regrettable that they should be allowed to pass before their external characteristics go on permanent record through the taxidermist's skill.

This book is written expressly for the amateur. Let it be understood that its purpose is not to incite the would-be collector to go forth and slay everything in sight with the sole purpose of making a large collection of stuffed fauna. Far from it. The workshops of professional taxidermists are periodically filled with our most valuable birds, slain in many cases by alleged sportsmen who go after game and, finding none, must shoot something. There are many trophies secured by legitimate sport

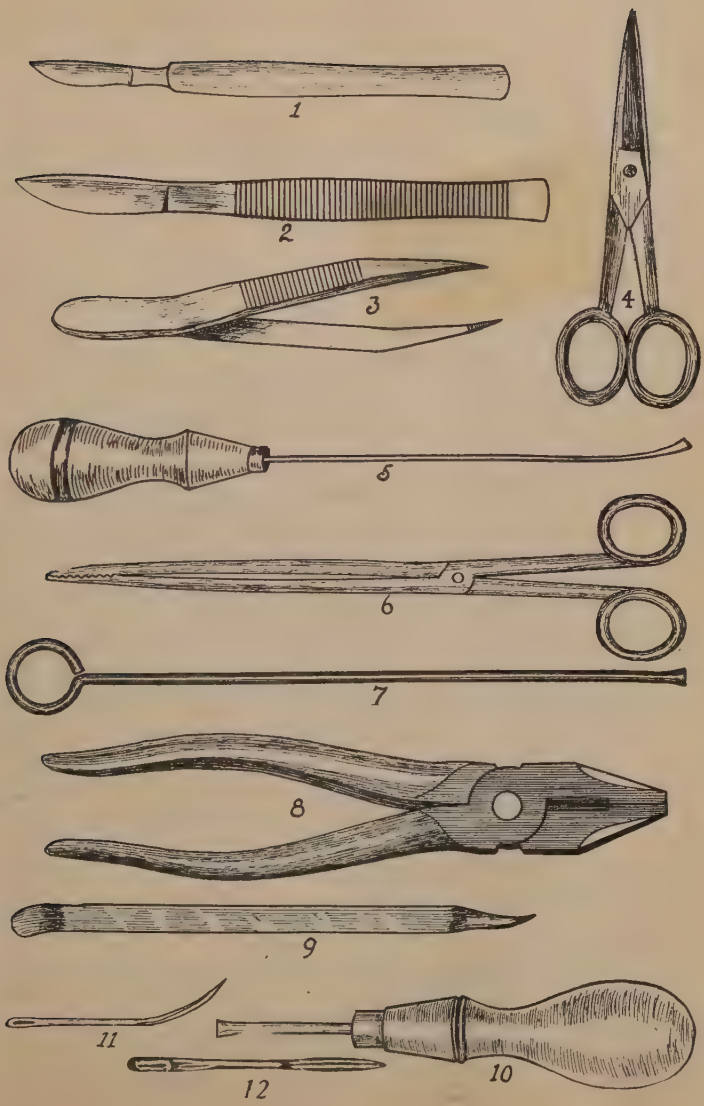
that can be preserved and will in later years bring back memories that cause us to live over again the scenes and exploits of vigorous youth. The practice of taxidermy is also a source of much pleasure and no little profit to those who attain proficiency in the art.

The observations and instructions contained in these pages are the outcome of many years practical experience and it is my sincere wish that they will prove of great assistance to those readers who are interested in this work.

Before we proceed further let me with all good intentions issue a word of warning against the indiscriminate killing of birds and many other forms of wild life, a great number of which are of the utmost economic importance to the agriculturist and the community at large. The Dominion Department of Agriculture, Ottawa and the United States Department of Agriculture, Washington, D. C., issue free bulletins written by specialists on these subjects. These can be had for the asking, and I would strongly advise readers to procure them and to make a study of the habits of the different forms of wild life in their vicinity. This will help greatly in the practice of Taxidermy, and to those who are farmers, will also eventually have an additional dollar and cent value by showing which forms are beneficial and which harmful.

Tools

The tools required by the Taxidermist need not be many at first. I have known several first class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workmen who could make a really fine job of a bird with nothing more than a jack-knife, a pair of scissors, pliers and an old file. While this may be sufficient for one who is a master of his profession, it will pay the beginner to get a few good tools. By this I do not mean one of the elaborate sets sold by some firms, many of the articles in which are either of little use or unnecessary.

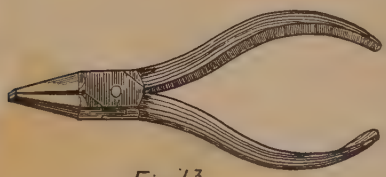


Fig. 13.

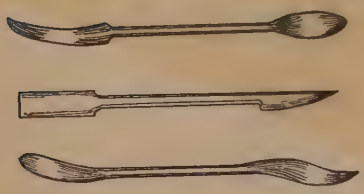


Fig. 14.

Our first chapters will deal with the skinning and mounting of birds and small mammals. I will therefore describe the tools which are necessary for this part of the work and leave the others to be described as we proceed.

Most of the articles necessary are described on page 97. Practically all may be purchased from dealers in taxidermist supplies. Nos. 1 and 2 are scalpels used in skinning, No. 3, tweezers for adjusting the feathers of birds and kindred purposes, No. 4, scissors, of which it is better to have two pairs, one fairly heavy for cutting small bones, etc. For the larger birds and mammals a pair of bone snips may be purchased. Nos. 5 and 7 are stuffing irons which the reader can make for himself out of

steel wire of various lengths and thicknesses. No. 6 is a pair of stuffing forceps. If desired a blacksmith can fashion these for you out of a pair of old scissors. No. 8, a pair of strong cutting pliers which you will need for cutting wires and for heavy work. No. 9 is a very handy tool and is called a scraper, it can be used to clean the bones and skulls of specimens, to insert eyes and for a multitude of other uses. A blacksmith can easily make one or it may be purchased direct from the dealer. No. 10, an ordinary brad-awl of which two or three sizes had better be secured. No. 11 is a three-cornered needle, known as a surgical needle, and No. 12, a three-cornered straight, or glover's needle. It is better to have a small assortment of these. Fig. 13 is a pair of fine flat-nosed pliers which are indispensable for use on small birds and mammals. Fig. 14 shows three modelling tools of various shapes. The reader can make any number of these from pieces of hard wire or ordinary nails of various sizes and lengths from 3 inches to 7 inches. The ends are heated and then hammered and bent into the shape desired and afterwards finished with a file and grindstone. It is better to temper the metal by plunging it into cold water whilst still hot. Larger modelling tools can usually be purchased at a good hardware store, but they are too large for fine work. You will also require a steel comb to comb out fur and a file to sharpen wires and metal parts.

I am taking it for granted that the reader is possessed of such carpenters' tools as a saw, hammer, brace and bits, and plane. These are indispensable. The student will also require a few

artist's sable brushes, and also brushes suitable for varnish, stain, glue and paste. He will need also a feather duster or goose wing to dust out feathers when cleaning birds.

The following list of materials will be required for the successful mounting of birds and small mammals. Some fine tow, excelsior, cotton batting, cotton twine and spools of thread, ordinary pins, large and small, very fine cotton or cotton caps for binding the plumage of birds, hardwood sawdust and corn meal, common plaster of Paris, gasoline, artificial eyes, a quantity of glue and coarse building paper for making papier-mache, some ordinary flour, arsenical paste, and corrosive solution. The following artist tube colors (oil), are also needed: Ivory black, Vandyke brown, Flake white, Chrome yellow, Yellow ochre, Prussian blue, Permanent blue, Purple lake, Vermilion, Light red. A greater assortment may be kept if desired but these will suffice for all ordinary purposes.

Skinning Small Mammals

The methods given in this lesson will apply to all mammals up to the size of a wolf, with very few exceptions and alterations which will be noted later. We will take for an example that easily-procured and often too common little animal, the Gopher.

Having everything nicely cleared for action place before you on the bench a pot of arsenical paste, Formula (1) and a bottle of corrosive solution, Formula (2).* The small Scalpel, Fig. 1, and

* Before commencing to use any Formula which contains poison see that any sores, cuts or abrasions on the hands are covered with court plaster, and read carefully the notes on poisonous preservatives on last page in book.

the Scissors, Fig. 4, are the only tools required. You will also require a small box (a cigar box will do) containing hardwood sawdust or corn meal, for absorbing the blood and fluids which would make mess of the fur and cause you a lot of unnecessary cleaning if not attended to. Proceed to take careful note of the eyes and any other feature that may help you in the mounting of the specimen. With the scalpel make the opening incision from the center of the abdomen to the vent, taking care that the inner skin which holds the entrails in place is not cut. Now with care, and by pressure with the fingers and an occasional use of the scalpel, separate the skin from the flesh until you reach the place where the hind legs join the body. These must be severed close to the point. By careful skinning you reach the root of the tail. Sever this also close to the body. The skin will now come away easily until you reach the fore legs. These are cut off close to the shoulder blade. Fig. 15, will show you the position and place to cut. Proceed until you reach the ears. These must be cut off quite close to the skull. It is better to cut these well into the ear cavity, for if they are cut off too short it will leave an opening which will spoil the appearance of your specimen when it is mounted.

You next reach the eyes. Cut very carefully the skin which holds the lids around the sockets, be very careful not to cut the eyelids. Next you arrive at the lips. Cut these away close to the skull, being sure to leave the inner skin or gum attached to the skin. Leave the skin attached at the skull at the top of the under jaw and nose. (See Fig. 15).

During these processes be careful not to pull and stretch the skin unduly.

The head is now severed from the body at the base of the skull and legs are skinned back right down to the toes, and the flesh cut and scraped from the bones. An opening is made in the base of the skull and the brains removed. The eyes are taken out and the skull thoroughly scraped and cleaned. The root of the tail is skinned with the scalpel, and, by placing the fingers around the skin the tail is easily pulled out from its sheath with a pair of pincers. For larger animals two pieces of stick with a notch in each are used. They are placed together over the root of the tail which is then drawn out by main force. During all these process liberal use has been made of sawdust or cornmeal to keep your fingers and the specimen clean. Fig. 15 shows the appearance of the skin just before completion, AA showing the leg bones cleaned of flesh, and BB with the flesh still attached. All particles of flesh and fat that adhere to the skin

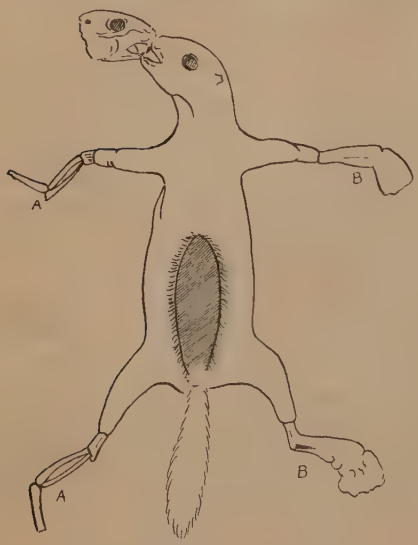


Fig 15

must now be removed. The skin is now turned right side out and examined, to see if it is soiled by blood or other matter. We will presume that this is the case and proceed as follows:

To Clean a Mammal Skin

With a wad of cotton and a bowl of cold water proceed to clean off all stains from the hair. When this is completed wipe off as much of the surplus water as possible. Next take another wad of cotton saturated in gasoline and apply to the parts previously cleaned. This kills the action of the water and keeps the fur from matting. Now spread the skin on a piece of clean wrapping paper and rub in fine sawdust or corn meal; continue with this until the fur is thoroughly cleaned. When almost dried out it must be combed and beaten in the open air to remove particles of sawdust and other adhering foreign matter. White skins, such as Weasel, are cleaned in the same manner, with the exception that dry plaster of Paris and flour in equal parts is used instead of sawdust. In using sawdust be sure that it is hardwood, otherwise the resin contained in softwood will stick up the fur.

Mounting

The skin being now thoroughly cleaned it is now turned inside out and the skull and leg bones painted with corrosive solution and the skin with arsenical paste.

Next cut six wires, one for the body, four for the legs and one for the tail, each should be at least six inches longer than the part they are for. For

an animal of this size 16 or 18 gauge will do. All wires used in mounting must be soft annealed or galvanized iron,* that which is used for stove-pipes will do very well in this case. A very good plan to straighten wires is to fasten one end to something solid, and with the pliers (Fig. 8), pull until all the kinks are out. It is then a simple matter to cut off the lengths desired. The four leg wires are filed to a point at one end and the body and tail wires are sharpened at both ends. They are then sandpapered lightly to allow them to run easily. Now place near at hand a quantity of fine excelsior, fine tow, a spool of strong cotton thread and a ball of cotton twine. Grasping one foot in the left hand insert the piont of the leg wire in the sole and put up along the left bone. With tow and cotton thread bind the wire to the bone and continue until the leg is the shape it was in the flesh. Repeat the process with all four legs taking care not to get them too large, and then pull them back into the skin.

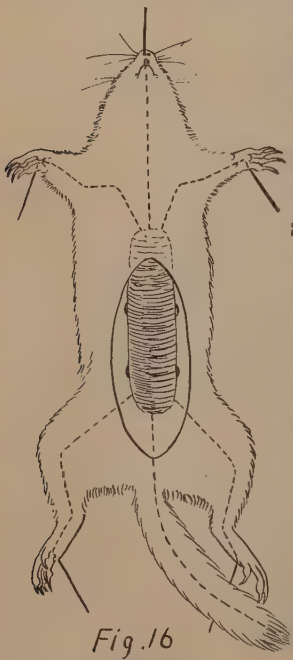


Fig. 16

The tail wire is now taken. One point in this should be long and tapering. Next wind a little fine tow around this wire until it is the shape of

* To anneal wire. Place wire in fire until red hot and then allow to cool slowly. Smooth with sandpaper or emery cloth.

the original tail. The end of the wire that is too fine to cover may be dipped in shellac to prevent it from rusting in the tail sheath. The artificial tail must then be painted with arsenical soap and inserted. Next make a hard body of excelsior bound with twine, much smaller than the original, and push the point of the body wire through this and clinch. The other point of this wire is then pushed through the brain cavity and out through one of the nostrils. In Fig. 18 is seen the method by which the wires are fastened in the false body; AA is the body, BB the tail, CC the right fore leg and DD the left hind-leg. The two wires have been omitted so as not to confuse the reader with too many lines. They are of course fastened in the same manner. Fig. 16 shows position of wires and false body inside the skin.

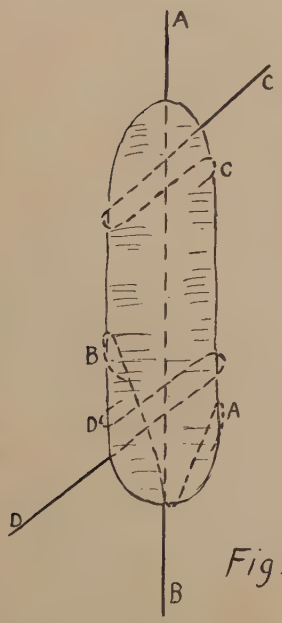


Fig. 18

The next step is to chop up some tow fine with scissors.* Having before you the stuffing rod (Fig. 5), and the forceps (Fig. 6), proceed to fill out the body, commencing at the head, having filled and shaped as far as the shoulders to your satisfaction, place

*Where tow cannot be secured, oakum such as is used by plumbers and steam-fitters will do.

a layer of chopped tow along the back between the body and the skin. Next pay attention to the hind quarters and work gradually to the middle. Now with a fine needle (Glover's) commence to sew up the opening in the abdomen, filling and shaping the animal as you proceed. Do not on any account

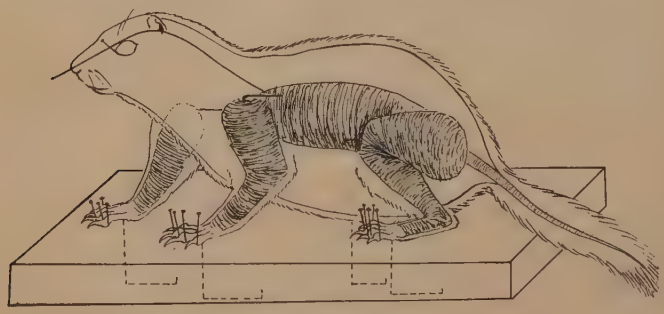


Fig. 17

allow any particles of cotton batting to get mixed with the tow as it is impossible to get a smooth finish with this material. You may also wish to drive a pin or sharpened wire into the specimen to hold some particular part in place, this also may be impossible with cotton.

Determining the Posture

We will presume that the gopher is now nicely filled, and that every attention has been paid to the modelling with the tow of the various features. You have decided to place it in a running position. A small block of wood (1 inch board) is secured as a temporary stand and four holes are drilled in it with the awl (Fig. 10), in the position that the

animal would occupy in life. Fig. 17 shows the gopher in outline with the position of the limbs and false body indicated. The dotted lines show the position of the wires in the board, a groove being cut underneath and the wire clinched and fastened with small stables.

The animal being now roughly in position we will proceed to finish the head. With some tow chopped very fine, fill in the cheeks, etc., see also that the place where the skull joins in the neck is also nicely modelled, be careful not to overdo this. Next, with papier-mache, proceed to model the lips and fill the eye sockets. Then insert a pair of glass eyes of the correct size and color. Be sure that both sides of the face are in proportion and the eyes exactly opposite each other, and that the lids, nostrils, lips and all other facial structures are nicely modelled in shape. The scraper (Fig. 9) is very useful for this, also the modelling tools shown in Fig. 14. The corners of the eyes may be held in place with fine entomological pins as shown. Now proceed to put the ears in shape by placing them between two very small pieces of thin pasteboard and holding them in place with pins. The rest of the body is now shaped by a little pressure here and there with the fingers. It may also be necessary to give a little more fullness in places, this may be done by pushing a sharp needle through the skin and lifting the filling where necessary. Now with an old tooth brush attend to the hair, but do not flatten it down. Lastly pin the toes in their correct places and place the specimen to one side to dry. It is best to take a look at it once in a while to see that it is drying in good shape.

Mounting Larger Mammals

The preceding instructions are sufficient for all small mammals up to the size of a rabbit. Animals larger than that and up to the size of a wolf are treated in the same manner with the following alterations and additions. After the legs have been skinned down, there still remains the pad, or sole of the foot which is difficult to turn. It is therefore better to open these from underneath, and remove the fat and flesh which is found there. Always be sure to skin the toes right down to the claws, do not cut the attachment. Next pare down the pads until only the tough skin is left. In opening the pad do not split it down the middle but make the cut at one side. The advantage of this would be readily seen if the animal were to be mounted in such a position that one or more of the pads were seen as is often the case. In such animals as the beaver, otter, and wolf, the tail must be split underneath and skinned right out to the tip.

After being skinned in this manner the hide is lightly salted and left for a day or so rolled up with the hair outside. This is to make the flesh firm. The skin is then placed over a fleshing beam and every particle of fat and flesh removed, as described in the section on Tanning. It is then placed in a pickle, Formula 3, for a few days. During this time it must be frequently turned and looked over to see that the pickle penetrates every place. If this is not attended to the skin may remain in folds in places and the hair come out. The skull should be thoroughly cleaned in the meantime by boiling and

scraping while hot. Bear in mind that too much boiling will cause the teeth to fall out.*

The hide is taken from the pickle and hung up to drain. It is then washed out quickly in clear water and drained again. Next place it over the beam and squeeze out all the surplus moisture with the knife (Fig. 4, Tanning). Next insert the wires in the legs and bind them to the bones in the manner previously described. Insert the false tail, and if it has been opened underneath, sew it up, previously painting it with arsenical paste. Next paint the skin all over on the inside with the paste.

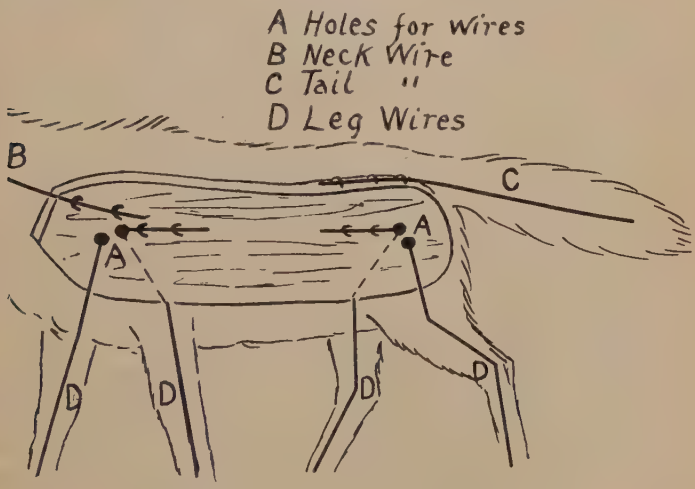


Fig. 19.

In place of the false body used in the smaller animals, cut out a piece of 1 inch board as shown

* Experience only will teach the correct amount of time necessary to boil a skull for cleaning. It is better, if possible, to have the teeth out of the water during the process.

in Fig. 19. The end of the neck wire is now bent over and inserted in the brain cavity of the skull and fixed there with plaster of Paris. Four holes are now drilled in the board as shown at AA and the leg wires are passed through and stapled at the other side in such a manner that they will hold the animal perfectly rigid. It is very essential that all wires should be fixed firmly otherwise you will have great difficulty in getting the specimen to stay in proper position. Be careful also to use only annealed wire.

The neck and tail wires are now stapled into place and the body filled with fine excelsior in place of the tow in the smaller animals. Tow may, of course, be used where necessary. Should you desire to have the animal with the mouth open, snarling, fighting, etc., follow the directions given in Rug Making. A careful study of the habits and peculiarities of expression of the subject in hand is essential. The fur must be thoroughly combed and brushed out, and left as nearly in a state of nature as possible. Collect all the good drawings and photographs of animals that you can, but above all get in touch with nature and study the creatures in their natural haunts. Do not be discouraged with failure nor satisfied with partial success.

Skinning and Stuffing Birds

By a peculiar coincidence, just as I was about to go out and secure a specimen for use in this lesson, a sharp shinned hawk, forgetting that its meal ticket had expired, saw fit to attack one of my chickens. I immediately decided to make an ex-

ample of it in more ways than one. Being a fairly tough customer in every respect he will answer very well for our lesson, the mode of procedure being the same in all birds, with few exceptions and alterations which will be noted later. Laying the bird before you on the bench on its back proceed to fill the nostrils, mouth, vent, and any shot holes there may be with cotton batting. This is to prevent the blood and secretions from escaping and mussing up the feathers. This accomplished, proceed to spread the feathers and make the opening incision from the middle of the breast bone to the vent, taking care that the inner skin that holds the entrails in place is not cut. Have handy a quantity of cornmeal, which apply liberally as you proceed with the skinning, to absorb the fluids and keep the feathers and keep your fingers clean.

Fig 20.

We find now that the wings are in the way and interfere with the proper handling of the bird. Lay the bone of the wing across the corner of the bench and quite close to the body strike it a sharp blow with a small hammer. This gives a clean break and allows the wing to be moved with facility. Repeat this with the other wing.

Proceed to separate the skin from the flesh until you reach the legs which sever at the second joint from the body. (Fig. 20, C shows the place). Next skin carefully around the vent and sever the tail at the root, but not so close as to cut the roots of the feathers. This will allow you to skin down the back. Now double and tie a piece of twine and loop this around the thighs as shown in Fig. 20 A. Hang the bird to the ceiling by this string and have it at a convenient height so that it can be skinned readily. Having the bird suspended you now have both hands at liberty. Proceed by careful skinning with the fingers and scalpel until you reach the butts of the wings, sever these at the place where they were previously broken, and proceed to skin down the neck until the base of the skull is reached.

Where Details Count

It is better at this stage to lay the bird on the bench, as if it is hung up too long it is apt to stretch the skin unduly. By careful skinning you reach the ears. Dig these out from the cavity of the bone in which they set and continue until you reach the eyes. Great care must be used here so that you do not cut the lids or the eye and let out the fluids. Continue until you reach the base of the beak and be very careful not to sever the skin here. It must be left attached. Now sever the head from the body by cutting off a very small portion of the base of the skull (Fig. 21 A). Remove the eyes from the sockets, being careful not to cut away the bony projection which is seen just above the eye. This projection is peculiar to birds of this class and if re-

moved it will not be possible for you to give to the specimen the keen expression characteristic of the birds of prey.

Fig 21

By cutting away a little more of the base of the skull and palate remove the brains and scrape away all surplus flesh from the skull. Next skin down the wings as far as the next joint B and remove the flesh. Now turn your attention to the legs and treat them in a like manner, skinning them just below the joint C. Proceed now to clean away the flesh and soft tissues from the root of the tail. At the extreme end of the backbone and above the tail

are two fatty glands, the secretion in which is very oily and is used by the bird to dress its feathers. These must be removed. Be careful not to injure the roots of the feathers or they will come out. Scrape away any particles of flesh or fat that adhere to the skin and anoint the legs and wing bones, skull, and root of the tail with corrosive solution. Now with fine tow and cotton thread bind the leg and wing bones to the exact shape they were before the flesh was removed. Next cure the skin by the application of arsenical paste. Put a little chopped tow in the skull and turn the skin the right side out. Make an incision in the soles of the feet and with a hooked and pointed wire draw out the tendons and sever them.

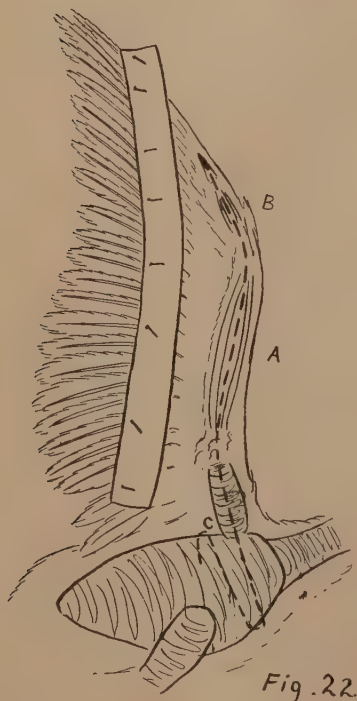


Fig. 22.

The flesh still remains in the second portion o fthe wings (Fig. 22A). To remove make an incision underneath, and skin, scraping the bone thoroughly. Two fold of skin are now found to be together at the outer edge of the wing. These must be carefully parted until the extreme

outer edge is reached. Here you will find a strong tendon which must be removed. There is also a small piece of flesh in the last joint of the wings (Fig. 22, B) which must be removed from underneath. Paint all places with corrosive solution.

If the feathers are a little soiled they may be cleaned after the bird is wired and filled. But if it is badly soiled, as it will be if you have failed to stop the nostril beak the other channels of escaping fluid, you must proceed to clean it now in the following manner: with cold water and a wad of cotton batting, clean off all blood and tissue repeatedly changing the water in bad cases. When all is removed sponge out all the surplus water. Take another wad of cotton and apply gasoline to the wet portions. It will not do any harm if you wipe over the whole bird with this as it will remove any grease that may have come in contact with the feathers.

Lay the bird now on a clean sheet of wrapping paper and apply a quantity of plaster of Paris, working it into the feathers until they are almost dry, and then beating out the surplus in the open air, using the goose wing for this. A very good thing to fluff out the feathers with is an old-fashioned bellows.

Where there is a lot of cleaning to do, it is better to do it before you apply the poison to the skin, afterward turning the bird inside out and applying the poison as described previously. Small birds can be cleaned very well by placing them in a box with plaster and shaking it thoroughly until all the feathers are cleaned, the water and gasoline being applied first, of course. Birds with glossy or bright-colored plumage are best cleaned with corn meal or hot silver-sand used in the same man-

ner as the plaster. The bird being thoroughly cleaned is ready for mounting.

Mounting Birds

First make a hard body a little smaller than the original* of fine excelsior bound with cotton twine. Cut three wires, two for the legs, and one for the body and neck. For a bird of this size about six inches longer than the parts for which they are intended and about 16 gauge will be required. Be sure that it is annealed. With a file sharpen the leg wire at one end and the the body wire at both. Push the body wire through the false body, bend over one end and push this through also and clinch it. (Fig. 23, A). With tow bind a false neck over the wire A, having it a little shorter than the original. Now insert the sharpened end of the leg wire in the sole of th foot, and push it up the back of the leg, behind the first joint and up through the tow with which you bound the leg. Repeat this

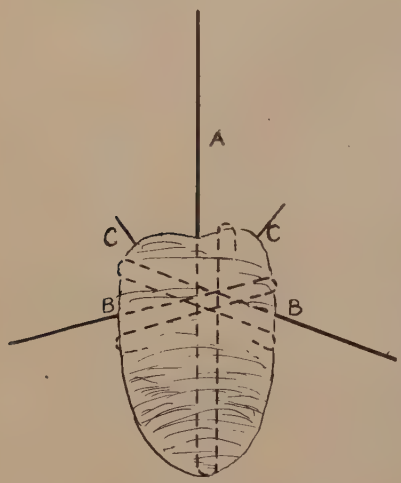


Fig 23

* It is a good plan to lay the original body on the bench before you and take measurements with a pair of calipers, making the false body a little smaller than these measurements.

with the other leg. Now carefully insert the neck wire inside the skin and push it through the skull, continuing until the false neck is in its right place. This done, grasp the leg wire with the right hand, and insert it in the body well up toward the shoulder (B. B. Fig 23). The reason for this is that one part of the leg has been dispensed with, as will be seen by referring to Fig. 20 C, and the wires are inserted where that joint would occur with the bird in a natural position. Be careful of this, as it is a common error to get these wires too low, and if this is the case you will not be able to balance your bird properly. The wires are pushed through, returned, and clinched as shown in Fig. 23.

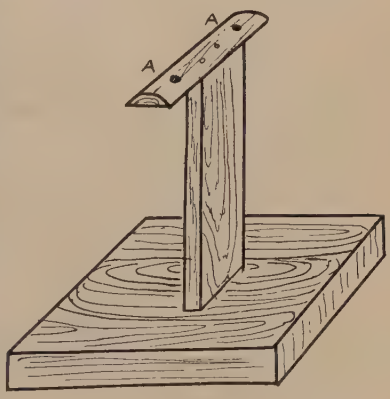


Fig. 24.

Cut up some tow fine and proceed to fill in the space between the body and skin, paying particular attention to the set of the shoulders and tail. Do not fill too much or you will have great difficulty afterwards in getting the feathers to lay in their proper place. Now with a needle and thread, commencing at breast, proceed to sew up the incisions taking care not to gather in the feathers. If you have not done so the bird is now cleaned by the process given previously.

Proceed now to make a temporary perch by taking a piece of board 6 inches square, and nailing a T piece to this. Next drill two small holes to receive the leg wires. Fig. 24. Now cut a number of small wires about four inches long and sharpen them at one end. Insert one into the root of the tail and put into the body to hold the tail in place. Now bend the neck and legs roughly into shape, and set it on the perch by placing the leg wires through the two holes (A. A. Fig. 24) fastening with small staples underneath. Give the bird the pose you wish to assume by bending the neck and legs into shape.

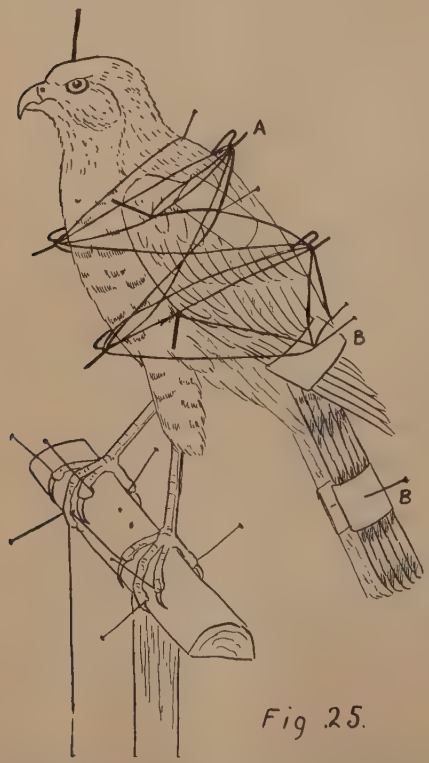


Fig. 25.

The wings now need attention. Take the one nearest you and hold it temporarily in place. Note the set of the shoulders and see if it requires more filing here. This will likely be the case. Make a small incision in the skin underneath the wing and with a small rod or the stuffing

forceps, place a little chopped tow where it is needed. Now pin the wing into place with two of the sharpened wires and repeat the process with the other wing. See that the wing coverts lay nicely and naturally in place.

The head now claims attention. From the beak and eyes fill in chopped tow until it is the correct shape, commencing where the neck joins the skull. When completed pass a fine needle and thread through the nostrils and tie the beak together. Now insert the eyes, the color and size of which you have previously noted. First fill the orbit with a little fine papier-mache or potter's clay then set the eyes and draw the lids nicely into shape. Do not have the eyes protruding, especially in birds of this class. It is here you will see the value of leaving attached the bony ridge above the eye as, with-

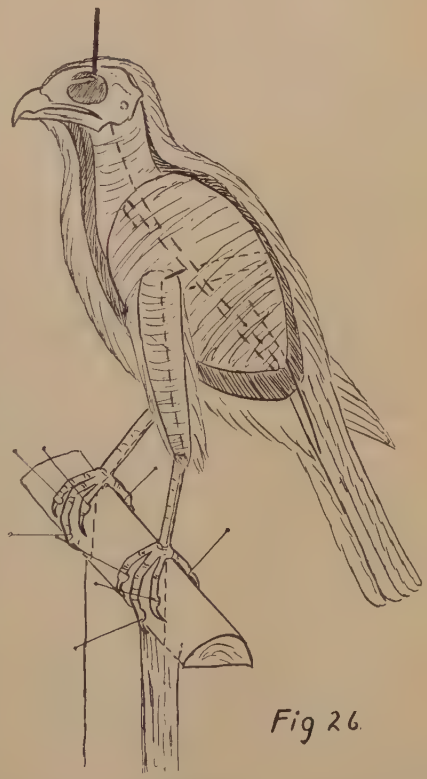


Fig 26

out it you could never give the bird that fierce and keen expression, that is so characteristic of it. Be sure that both eyes are set exactly alike.

Look the bird over and see that its position is correct. Take four more wires pointed at one end and bend them into the shape indicated in Fig. 25, A. Push these into the body as shown, and then proceed with the tweezers to put every feather in its proper place. To do this properly will take some time. It is however, one of the most important parts of the work. The wings and tail are held in shape between strips of pasteboard held together by pins (B. Fig. 25). The bird is then bound with very fine cotton or cotton caps* to hold the feathers in place during the process of drying, and the feet pinned into their proper shape. Much depends upon the care and attention given to these details. Fig. 25 shows the bird in position upon the temporary stand, smoothed, bound and pinned into shape. Fig. 26 is the same bird with one side removed, as it were, to show the position of the false body, legs, wires, etc., the shaded portion represents approximately the amount and position of the loose filling of chopped tow.

Skinning Heads of Birds

Such birds as ducks, woodpeckers, cranes, and herons, have heads too large to allow them to pass readily through the neck. In this case the neck is severed as close to the skull as possible inside, and the skin turned right side out. The head is

* Cotton caps are spools of very soft cotton thread and are used in the factories for the weaving of cotton cloth. They may be obtained from a dealer in Taxidermist supplies.

then skinned out from a cut in the back of the neck as shown in Fig. 27. This incision is sewn up during the process of mounting with a very fine needle and thread, taking care not to gather in the feathers.

Removing Fat From Skins of Birds

Many birds, especially ducks, have a thick layer of fat inside the skin. This must in all cases be removed before you attempt to cure or mount the bird. I have tried many processes but finally came back to carefully cutting away the fat with a sharp pair of scissors, and then scraping the surplus away with a dull knife, using corn meal or hardwood sawdust liberally to absorb the grease. To clean the skin of a very fat duck properly requires more time than it does to skin and mount it. Should the feathers have become at all greasy they should be cleaned by the liberal use of gasoline and sawdust.

Fig 27

Mounting Birds with Spread Wings

Should you wish to mount a bird with its wings spread, flying or fighting, proceed in the same manner as advised previously with the following additions. In place of the three wires for the legs and body, cut five, the two additional ones for the wings. Sharpen these at both ends and have them considerably longer than the full length of the wing

bones. Run one end along the various joints to the extreme tip of the wing bone and bind the inside end to the bone reproducing the flesh with tow. Fill in the cavity between the bones at A and B (Fig. 22), with tow and neatly sew up the incisions.

Having inserted the neck wire into the skin and through the skull proceed to push the wing wire through the false body at the point in the shoulder (C. Fig. 22 and 23). Turn it back and clinch it in the manner shown. This may be a little difficult at first, the wire being solid in the wing and having no play whatever. Careful work with the pliers will get it into shape. The dotted line Fig. 22 indicates the position of the wire in the wing and body. Both wings are treated in the same manner. Proceed with the mounting as described before, the only difference being that the wings are braced into shape with pasteboard in the manner shown. Remove it from the temporary stand and fix it to the one it is going to occupy permanently. Color the legs, beak, etc., as described in the section on coloring, first cutting off and removing any projecting wires, taking off the bindings and noting that the feathers lay well in place.

Dead Game

Very excellent results may be achieved by mounting ducks, geese, pheasants and other birds as dead game. The birds are skinned in the usual manner and wired, wings, legs and body. In this case the wires are much lighter than would be required to mount a bird of the same size in the ordinary manner. The eyes are left either closed or only half

open. It is a good plan to first hang the bird upon the wall and pose it in a natural manner, then with a pencil make an outline. This will help you greatly to get the right hang afterward. Dead game look very well in the cases described in the section on making paper forms. The usual method is to mount the birds upon a wooden panel.

Skinning and Mounting a Horned Head

In this case we will take as an example the head of a deer. We have selected a specimen with the neck skin cut off well down to the shoulders and brisket, and not damaged or cut up in any way. Lay the head before you on the bench in the position shown in Fig.28. The opening cuts are made as indicated one straight down the back of the neck to a point directly behind the horns A. A. and two others to the center of the base of the horns A. B. Proceed with the point of the knife to loosen the hide around the horns cutting upward and being careful that the skin comes away clean. When the horns are freed at the top, proceed to sever the ears from the skull.

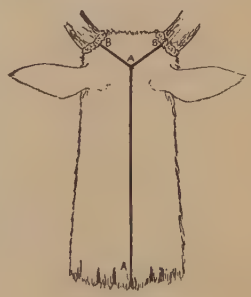


Fig 28.

By careful skinning complete the work on the horns and continue until you reach the eyes. Great care must be exercised here so that the eyelids are not cut. Directly in front of the eye is a wax duct which must be dug out with great care from the

cavity of bone in which it sets. In working about the mouth be sure and leave at least an inch of the inner skin or gum attached to the hide. If this is not done it will not be possible to model the face properly. Proceeding carefully you come to the nostrils which must be cut away in the same manner as the lips.

The skin is now entirely detached from the skull. By careful cutting and pressure with the fingers separate the outer skin of the ears from the cartilage until the ear is entirely inverted (Fig. 29). Be careful when you reach the edges that the skin does not tear away as this is a difficult place to mend properly. The inner and outer skin of the nostrils and lips must now be separated but on no account must the inner skin be cut away. Next carefully salt every part of the flesh side of the head skin, or scalp, as it is called and roll up, hair side out, for a few days.

Fig. 29.

The next job is to remove all the flesh from the skull. Professional taxidermists as a rule use a mallet and chisel. This is not so difficult as it would seem, for once the different points are learned the flesh can be cleaned off in half an hour, the secret being to commence at the point of the lower jaw and the nose and get the chisel between the flesh and the bone and continue in this manner. Do not try to move the flesh by cutting away small pieces.

Perhaps an easier way for the amateur is to boil

the head being careful not to overdo the process, and to remove the flesh whilst it is still very hot. A piece about 2 inches wide is then cut out of the base of the skull and the brain removed. After every particle of flesh is removed the skull is painted over with arsenical solution Formula 12, and left to dry. Be sure to clean the skull thoroughly or your job will eventually be infested with insect pests.

After the scalp has laid in salt for a couple of days, proceed to remove all the surplus flesh with the currier's knife. The skin being placed on the fleshing beam for this purpose. I have found that the adjustable draw-knife is best to work around the nose and lips. During this process be very careful not to make any cuts in the skin. If you are unlucky enough to make a couple of gashes keep smiling, they can be mended. When the scalp is properly fleshed it should be washed out in clean water and then hung up to drain. It is then placed in the pickle (formula 3), for several days and thoroughly stirred and turned each day, to insure the pickle penetrating every portion.

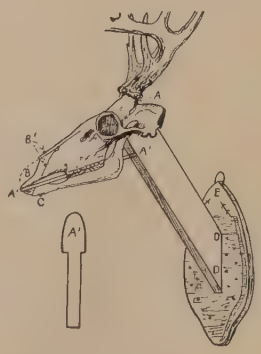


Fig. 30

The next step in the process is to get the head in shape. With a hand drill if you have one or a brace and 1/8 inch drill, make four holes around each horn in the position indicated by A, Fig. 30. These holes should not be more than 3/8 inch deep and should then be filled with small wooden plugs

cut off level with the bone. These plugs should then be marked with black paint or indelible pencil. The purpose of these plugs is to afford a means of nailing the skin tightly around the horns, when the head is mounted, and they are marked so that they may be easily seen. Next drill two small holes through the skull into the brain cavity. Now cut a piece of 2x2 lumber about 18 inches long and fit one end into the brain cavity, and fix it there at right angles to the top of the skull by driving nails into it through the two holes you have just drilled. Make sure that the neck-piece is in proper alignment with the skull. Now mix a quantity of plaster of Paris, fill in the brain cavity around the neck piece and leave to harden. Now cut out a piece of wood to fit in the nose as shown in B. Don't have this too large or it will interfere with subsequent modelling. The next thing required is a lip piece, made of soft ½ inch pine and the shape shown in A. When the plaster is thoroughly set around the neck piece fix the piece in the nose by drilling small holes as indicated by B and nailing. The lip piece is now fitted into position AA and nailed to the nose and neck pieces. Now drill a hole through the jaw at C and fix with a wood screw.

The next thing is to cut off the neck piece to the correct length and angle. The length of course depends a great deal on the scalp. We will presume this is ample. Have some one hold up the head with the neck-piece against a door-jamb or post, and retire some distance to get a proper view of the head. When you get it to suit mark the neck piece with a pencil as indicated by D. D. and saw it off.

From a piece of 7/8 inch board cut a neck-board. The shape of this will vary considerably according to the length of neck. If it is cut well down to the shoulders it will be about the shape shown in Fig. 31, 1. Just above the shoulders it will resemble 2, and shorter 3, getting almost circular just behind

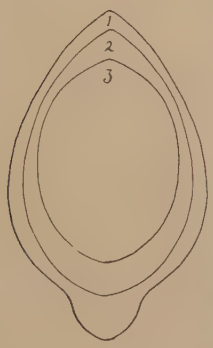


Fig 31.

Fig. 32.

the ears. Having cut this piece to suit, drill two holes obliquely through the back of the board and bend a wire as shown at Fig. 30 E. This should be firmly stapled on the inside, and is to hang up the head during the process of mounting. This done, fix the board to the neck-piece with screws from the back. Be sure that the board is properly centered and not over to one side. The neck board must then be countered by nailing pieces across the grain as shown to prevent it warping, Fig. 32 shows the next step. Nails are driven partially in as shown around the neck board lip-piece and on the sides of the face, and the neck and face are built up with fine excelsior and string. The excelsior will make a

tighter and smoother job if dampened with water. A little plaster of Paris is now put into the eye-sockets. Keep this well back so as to allow plenty of room for modelling material. The head is now placed to one side. Be sure that it is correct and smooth, as no filling is permissible.

Preparing the Scalp

Remove the scalp from the pickle and allow it to drain. Give it a good washing in clean water and drain again. Place it over the fleshing beam and squeeze out all the surplus moisture by working the flesh side with currier's knife. See that the eyes, lips, nostrils, etc., are in good shape, and proceed to sew up all shot holes and cuts that you may have made.* Those in the neck are sewn with Barbour's linen thread or Gilling twine coated with shoemaker's wax. It will be necessary to use four or six ply of this according to the thickness of the skin. The shoemaker's wax may be coated with soap to make it slip more easily in the wet skin. The small cuts on the face must be sewn with strong linen thread. Three cornered needles are always used.

The next thing is to cut two pieces of pliable paste-board the size and shape of the ears and coat them with shellac or hot paraffin. These are inserted behind the cartilage and held in place by stitches. These must be nicely hidden and the hair combed over them. Some taxidermists advise taking out the cartilage altogether, but I find by expe-

* Barbourous linen thread or gilling twine known as shoemaker's thread, is found to be the best for sewing up heads, etc.

rience that the ears have a tendency to split after the head has been mounted a year or two. This is due to the dry heat to which most heads are subjected, hung high on walls in rooms which are closed tight for six months in the year. For the same reason it is better not to thin down the lips and nose too much. The ears having been attended to, the scalp is now brushed over with Arsenical soap on the inside, and placed over the skull and neck, or manikin as it is now called. Adjust the eyes by driving a small nail into the wax duct and nail the skin in proper place around the horns by driving small nails into the plugs which were previously placed there and marked. Next tack the skin temporarily to the center of the neckboard and commencing at the horns proceed to sew up the cuts in the back with a large three-cornered needle and strong thread. After you have sewn a little way down the neck fill in the butts of the ears with excelsior and then proceed to finish the sewing. During this process be careful that the neck does not rest on the corner of the bench. Should it do so it will likely leave a dent in the manikin that will show when the head is dry. Now trim off the surplus skin around the neck board and fasten with shingle nails about one inch apart.

Having mixed a quantity of papier-mache, commence at the lower lip and shape nicely. A very little chopped tow can be used at the back of the mouth and cheeks if necessary. Now tack the lip to the lip-piece and proceed to model the nose and lips. The inner skin which has been left on, forms a bag. Place a roll of composition in this and model the lips into shape. Use a modelling tool for

filling, etc., but the most of the shaping is better done with the fingers and thumb, using both hands together and standing directly in front of the head. By this means you are more likely to get both sides alike.

Next come the eyes. Fill in around the wax duct with papier-mache and be sure that it is properly closed and correctly shaped. Having the eyelids in fair shape and both sides alike, insert the eyes and nail the corner to the bone with a shingle nail. You probably noticed in skinning the head that the skin was attached closely to the bone at this point. Do not have the eyes too staring. A deer as a rule has a quiet docile expression. Now attend to the ears. Fill the butts nicely to shape with chopped tow.

Cut and sharpen two stout wires. Insert those in the tips of the ears and push them down the back and into the manikin to hold the ears in position. The head is now brushed and combed into shape and hung upon the wall to dry, during which process it should have careful attention.

Finishing the Head

When thoroughly dry, take down the head and cut off the nails around the horns and remove the wires from the ears. Brush the head thoroughly until perfectly clean and wash the horns to remove any stains or dirt that may be upon them.

Finish and smooth around the eyes and nostrils with very fine papier-mache which may be colored with brown umber. Allow this to dry. Then paint these places with a mixture of Vandyke brown and

lamp black (artist's colors) mixed with turpentine. The bare skin of the nose may also be touched lightly with it. Clean the eyes with a little turpentine on a small piece of rag and polish them. Next brush the horns with a mixture of turpentine and linseed oil in equal parts, and rub off the surplus. This gives them the right amount of life. Never on any account varnish horns.

The next consideration is a shield on which to fasten the head. If you are handy with carpenters' tools you can no doubt make one, otherwise you can have one especially made, or order one from the dealer in taxidermy supplies. They are made in a variety of shapes and designs the one most commonly used being an oval with a moulded edge. This fits the head fairly well. For many years I made a pattern in the way shown in Fig. 33. Place the neck on a large piece of wrapping paper and draw a margin around it as shown by the dotted line about 3 inches wide in this case. Next cut out the four semi-circles and you have a pattern that has the advantage of fitting the head and also of being of good design. A pattern can be made for any head by proceeding in the same manner. This is a great advantage when making a collection of heads that are to be hung in one place. The edge of the shield is usually finished with a mould. The one shown in A is more commonly used but can however be varied to suit.

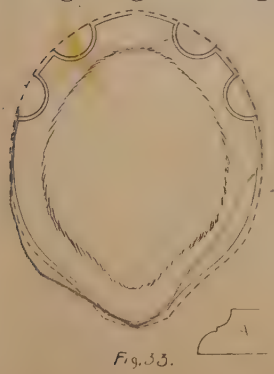


Fig. 33.

Skinning, Preserving and Mounting Fish

This branch of taxidermy is probably the most difficult of all, and the results usually achieved are the most disappointing. The majority of stuffed fish bear very little resemblance to the original in form and practically none at all in color and transparency. To such an extent is this the case that many museums have discarded this method in favor of the more exact and scientific mode of reproduction in plaster, papier-mache, etc. However, the taxidermic method being still in vogue, and many sportsmen still preferring to have the actual fish preserved rather than have a more lifelike cast made of it I will describe the method briefly.

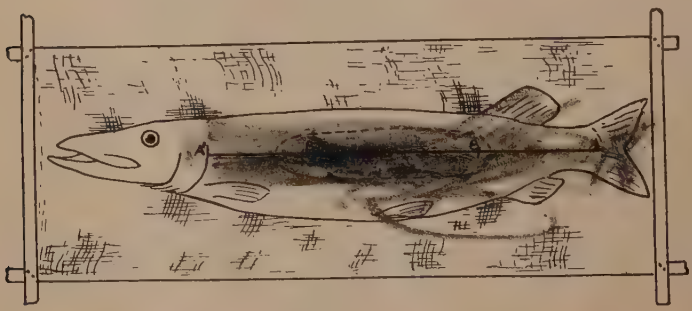


Fig. 34.

We will take for example a jackfish or pike. Making a temporary framework on which tack a piece of fine sacking or strong cotton cloth, Fig. 34, and prop this up some inches from the bench. This stretcher is kept constantly damp, and is better than a board to skin the fish on, in that it conforms more to the shape of the fish and is therefore less liable to damage it.

Next lay the fish on a large piece of wrapping paper, and with a long pencil make a correct outline of it and take notes of its color and peculiarities. This is better explained by Fig. 35, which is a copy

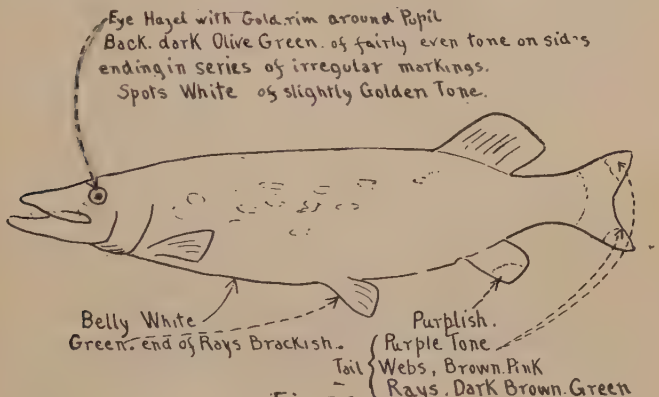


Fig. 35.

of a chart I made of a jack-fish, and the original notes. This is not a set example but can be varied according to requirements. This accomplished, examine the fish and decide which is the best side. Cover this with thin paper, which will adhere readily to the mucus or slimy covering peculiar to fishes. This precaution is to help the scales to stay in place. Next lay it best side down upon the stretcher, Fig. 34, and proceed with a large pair of scissors or bone snips to cut the scapular arch (this is a large bone just underneath the gill covers) at A.1. Continue with the scissors to make a straight cut the entire length of the body of the fish A1.A.

With a sharp knife separate the skin from the flesh on both sides of the cut, until the fins are reached. These must be cut off on the inside. The

skin is usually quite thin in these places, so be careful not to cut it as the skin of a fish is exceedingly hard to repair. The fins and tail severed, continue to skin on the underside. When this is accomplished sever the head from the body at the shoulders, and the body will come away clean. During this work care has been taken not to wrinkle the skin unduly and to keep it moist. Remove all particles of flesh from the base of the fins, tail, etc., an operation requiring great care, and also scrape off any pieces that may have been left attached to the skin.

The head now claims your attention. Cut away a small portion of the base of the skull and remove the brains, also the eyes and the flesh from the

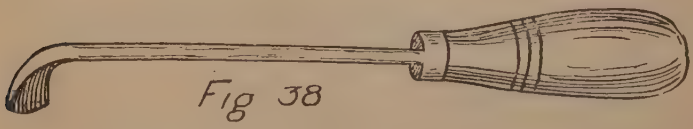


Fig 38

cheeks, and all other cavities. This is quite a job and must be done from the inside. It is best accomplished by a scraper, of which various sizes can be made from pieces of hard wire, old flat files, etc., as shown in Fig. 38. The tongue also must be removed. This requires great care. The skin is now painted on the inside with arsenical paste and is ready for filling.

Proceed to model the head with fine papier-mache, and chopped tow, taking care to fill all the places where the flesh has been removed. The body of the fish can be filled with a variety of materials, such as sawdust, sand, bran, dry plaster of Paris, and chopped tow. Personally I prefer a mixture of

sawdust and plaster. The skin being laid on the stretcher commence at the head, sewing up the skin and patting it into shape with a flat wooden paddle as you proceed. Having filled about a quarter of the length of the fish, start at the tail which treat in the same manner. During this work have constant reference to your outline sketch, and also pay attention to the fins and tail and see that they are kept damp otherwise they will split. A common error is to get a fish too long. Be careful then to keep it shortened as you proceed.

The whole being nicely filled and patted into shape and sewn as far as B. B. Fig. 34, cut a piece of board the comparative size of which is indicated by the dotted line, and attach two wires as shown in Fig. 37. This is inserted in the fish with the wires protruding and the remainder of the incision sewn up. Next cut a piece of board a little larger than the fish, and drill two holes corresponding to the position of the wires. Attach the board to the fish by passing the wires through the holes and fastening them at the back with staples, and turn the fish right side up.

Carefully remove the paper which has held the scales in place, and pat the fish nicely into shape with a wooden paddle. Should any more filling be required it may be inserted under the gill covers and worked into place with a stuffing rod, which should be made of a piece of flat smooth lath for fish, the ordinary rod being of no use for this kind of filling. Adjust the fins and tail and keep them in shape by placing them between two pieces of pasteboard which are pinned together at the edges. Avoid pinning through the fins if possible.

Now pay attention to the head, see that it is properly adjusted and that the cheeks, jaws and other features are nicely modelled into shape with papier-mache. See that the eyes are also in shape but leave sufficient room in the orbits to allow you to fill in a little composition when you set the eyes later. The gill covers are pinned into shape and the mouth held in place by having sharpened wires driven into the board, close to the jaws but not through them. Should the head be inclined to sag it is propped up underneath with a little tow, etc.

Fig. 37.

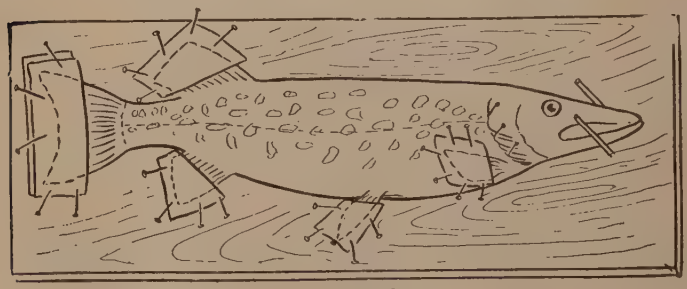


Fig. 36

The fish is now sponged off clean and given a very thin coat of Damar varnish to keep the scales in place. It is then placed on one side to dry, which will take a month at least. Fig. 36 shows the fish with fins and tail braced and otherwise put into shape for drying.

When thoroughly dry the heavy filling is taken

out, the stitches being opened and the board removed. It is then replaced with chopped tow, or very fine excelsior in the case of large fishes. (In small fish it is not necessary to take out the filling.) The board is replaced and another piece of thin board with the edges bevelled is placed on the back outside the skin, the two being screwed together hold the skin firmly in place.

It is then placed on the panel which it is to occupy permanently, the braces are removed from the fins and tail, and the eyes inserted. These have previously been colored, as mentioned in the chapter on coloring and tinting. Should any of the fins be broken they are mended by sticking pieces of tissue paper on the back with varnish, and the deficiencies in thickness made up with a little hot wax. For final coloring see also chapter on that subject.

It is advisable when possible to have fish enclosed in a glass case. If you have some artistic ability you can make a very fine duplicate of a fish by following the methods described in Plastering Casting.

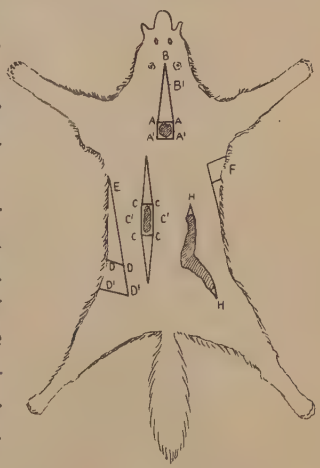


Fig. 39.

Making Fur Rugs and Robes

We have before us the skin of a Prairie Wolf, tanned by one of the processes given on tanning.

If you are a beginner you have undoubtedly cut and torn a number of holes in the skin. Do not be discouraged at this as they come from the best professional tanneries or fur dressers in very badly damaged condition at times. Fig. 39 shows the skin laid before you fur side down exposing a number of holes and bad places. Most of these could be fixed by merely sewing in a patch of fur identical in length, color and texture, but as a professional you can take my word that such pieces are hard to find. You may have hundreds of pelts, but you would find that the fur is either too long or short or too light or dark, no two furs being exactly alike. To overcome this difficulty furriers and taxidermists have to make use of what is technically known as a drop. In the shoulder of the skin is seen a round hole, to fix this proceed to cut out the square as shown A.A. A1. A1. (a good sharp knife must be used for this work) and always cut from the skin side, in this way you will not cut any hair. Having removed this square proceed to make two long cuts from A. to B. Now take this triangular piece and with a glover's needle and strong thread sew the points A. A. to the corners A. I. A. I. Continue now to sew in this piece, this will bring B. to

Fig. 40

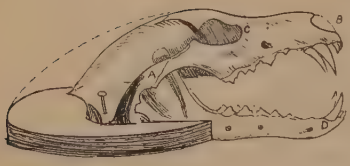


Fig. 41.

approximately B.1. The remaining portion is merely sewn together.

We next turn our attention to C.C. C.C. This is too long to allow us to make a single drop so we make a double, bringing the points C.C. C.C. together at C.1. C.1. and proceed as before. In all skins the portions which lie underneath the shoulders and more especially the flanks are almost bare. Although this is perfectly natural it gives the finished rug a somewhat damaged appearance if not attended to. To do this the portion enclosed in D.D., D.1. D.1. is cut out and discarded, and a cut is made from D. to E., and D.D. joined to D.1. D.1., commencing at the inside corner. F. shows a shoulder fixed in a similar manner.

H. H. looks impossible but it is merely a tear which has assumed this appearance and position in the tanning. To fix this moisten the edges with warm water and try and pull it together. It may still fold at the corners, in which case cut out the small triangular pieces as indicated and sew together. During all this work it is presumed that you have constantly examined the fur side to see if the pieces were matching. It sometimes happens that, due to a skin being stale or to improper tanning it is what is known as hair slipped, that is, that the skin is devoid of fur in places. Such places must be cut out and fixed by any of the foregoing methods.

Mounting Heads for Rugs

The skin is now nicely repaired and you have decided to have it with a fully mounted head with

the mouth open. For our present lesson we will presume you have saved the natural skull.

First immerse the head of the skin in a pail of water to the ears so that it will soften while you proceed with the other work. Next from a piece of soft pine board 7/8 inch thick cut a baseboard as shown in Fig. 40 making the pointed end so that it will fit between the lower jaws, in which you have previously drilled four small holes, two on each side. With nails or small screws fix the lower jaw as shown in Fig. 41. The upper portion is now fixed into position with nails as shown, and held firmly by having the cavities around the hinge of the jaws at A. and the back of the mouth filled with plaster of Paris which has been mixed for the purpose. Several small nails are now driven partially into the edge of the excelsior which is held in place by cotton twine wound back and forth over these nails. The amount of excelsior is indicated by the dotted line and the edge of the board.

Now model a tongue in papier-mache trying to imitate the shape of the natural one as near as possible. Set this away to harden.

Next take the head skin out of the water and wring out all surplus moisture. This done, thin down any places around the nose, lips and eyes that may have been overlooked in the fleshing. Should any of the interior of the lips have been accidentally cut away replace it by sewing on a thin piece of leather. See that the ears are skinned right to the tips and sew up neatly any small holes in the face which you may have cut.

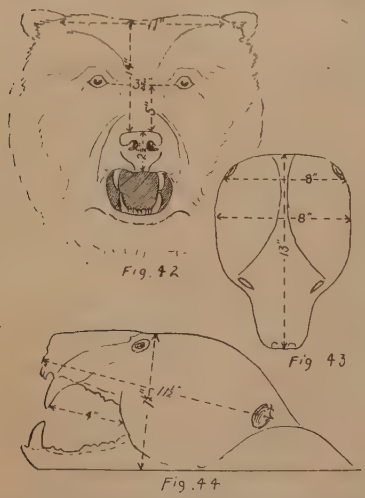
From a piece of pliable pasteboard cut two pieces the shape of the ear cartilages, give these a coat of

shellac, or hot paraffin to waterproof them, and insert in the ears. This is to stiffen the ears and prevent them shrivelling. With a fine glover's needle sew the ear through in several places to hold the pasteboard in place. If the under lip has been cut it should now be neatly sewn together. Brush the skin of the head over with arsenical paste, and place it over the skull. A plug of wood has previously been inserted in the nose cavity as shown in Fig. 41 B. With a fine nail fix the center of the inturn of the upper lip to this plug. Next tack the corner of the eyes at C., and fix the lower lip by taking a stitch around the base of the lower incisors at D. See that the butts of the ears and the eyelids are adjusted and then tack the skin around the baseboard.

You are now ready to proceed with the modelling. With some fine papier-mache, model the lips, nose, and other features, into the shape that your previous observations tell you they should assume. To give a snarling effect the lips should be curled back from the teeth and the nose gathered in a series of wrinkles. The main feature is, however, the eyes. Having selected a pair of the right size and color proceed to insert them taking care that they are exactly opposite, and that the lids are properly adjusted. The whole expression may be changed by a slight alteration of the eyelids.

Space forbids me to go into all the details of expression. Proper results can only be gained by experience and constant observation, and I cannot too strongly emphasize the value of taking notes and measurements where possible. Figs. 42, 43 and

44 are merely a reproduction of sketches and measurements of a black bear head which I had for mounting some years ago. They will serve to illustrate my meaning. In addition no opportunity should be lost to make notes from life.



The modelling of the features being now completed, the ears should be fixed in position by having a sharpened wire run down the back from the tip and into the excelsior. The fur is now nicely combed into shape and the head placed to one side to dry. In a few days it is taken again and the artificial tongue inserted, and the inside of the mouth, lips and palate modelled and nicely smoothed off with the modelling tools, which are dipped in water, the drying is then repeated.

Waxing and Finishing

This next phase of the work should only be undertaken when the head is quite dry.

Prepare a small quantity of wax as described in formula No. 9 and apply quickly whilst hot to the mouth, tongue and surfaces representing membranes with a soft brush (camel hair). Next apply black wax prepared in the same manner, to the lips

and nose, and lastly with a little soft modelling wax, formula 10, fill in the eyelids, nostrils, etc., and smooth off with a piece of damp rag. Clean the teeth by scraping off such particles of wax that may have adhered to them and give the mouth a coat of white shellac. The head is now completed and if you have followed the instructions carefully you should be pleased with your job.

Stretching the Skin

When a skin has been tanned it will not as a rule lay flat therefore it must be stretched. First soak the feet in water for a while and then see that they are nicely pared down. If the fleshing has been properly done in the first place they will be all right. Now with a brush dampen the skin with warm water, taking care to keep the hair dry.

Next stretch the skin on the floor or a board, fur side up with 1½ inch nails about 3 inches apart. Try to get width rather than length, especially in the legs. Pay particular attention to the claws. See that they are properly adjusted and turn down naturally; a little pad of tow placed under the foot will help this. When dry the skin must be taken up and trimmed by taking off the rough uneven edges with a sharp knife. It is now ready for lining.

Lining a Rug

Procure some good felt of the color desired, purchasable from any large dry goods store in widths of six feet. Measure roughly the amount of lineal feet of border that you will require and cut strips 3 inches wide. With a pinking iron proceed to scal-

lop the edge, by placing the felt on a piece of hardwood and striking the iron sharply with a hammer. Pinking irons can be bought from a hardware store or a dealer in taxidermy supplies. Sew the border to the skin. Gather it neatly at the head and feet. Lastly cut out a piece of strong denim or duck, the shape of the skin and a little larger, to allow for the edges being turned in and sew this to the felt border close to the skin. This completes the rug. Should you require it, the rug may be inter-lined with sheet cotton batting; this is advisable where there are seams due to repairing.

Half Heads

It is sometimes desired to mount only the upper half of the head on a rug. To do this cut a board the shape as shown in Fig. 45 and place nails around the edge, with fine excelsior and twine, make head similar in shape to Figs. 45 and 46. Proceed as instructed for full heads. This makes a good job and is about one-quarter the work necessary to mount a full head. If the skin is to be lined flat it is only necessary to sew up the eyes, etc., and treat head same as the rest of the skin.

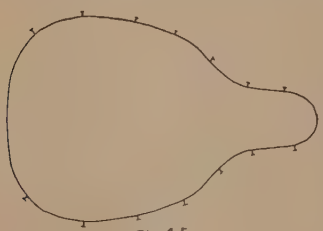


Fig. 45

Fig 46

Mounting and Polishing Horns and Hoofs

The horns of deer, moose, elk, and kindred animals, make very attractive trophies if neatly mounted upon a shield. This class of horns should never be polished or varnished. This must be left as natural as possible by simply washing with warm water and soap and afterwards brushed over with a mixture of linseed oil and turpentine in equal parts. The surplus is then rubbed off with a piece of rag. This gives just sufficient life to the horns without objectionable gloss. To mount the horns saw off from the skull leaving the frontal bone attached (A. Fig. 47). Next cut out a piece of board as indicated by the dotted line and attach the horns with screws as shown. The bone is now covered with a piece of the natural scalp or with plush or velvet. This is tacked to the board. The horns are then fixed to a shield, with wood screws from the back.

Fig. 47.

Fig. 48

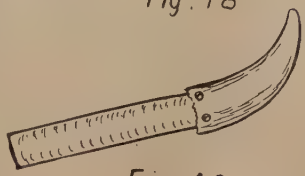


Fig. 49.

The horns of oxen and buffalo, are as a rule pol-

ished. They must first be removed from the core by boiling; but only boil enough to loosen the horns. Now attach each horn to a stick of wood with screws as in Fig. 49.

Now place the stick in a vise, and if the horn is very rough, as in the case of a buffalo, proceed to pare it down. First work with a draw knife next with a spokeshave, a carpenter's steel scraper or a piece of broken glass, then with fine sandpaper rubbing the way of the grain, and last with a mixture of boiled linseed oil and powdered pumice stone or emery powder, rubbed in with a rag.

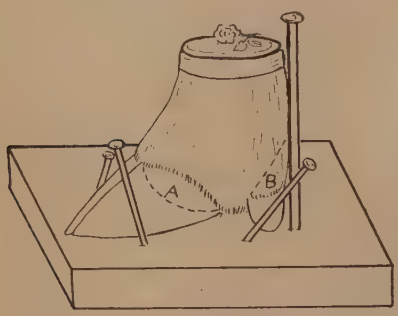


Fig. 50

When polished the horns are taken off the stick, and fixed to the natural skull or to a block of wood as shown in Fig. 48. They may then be fixed to a shield in the same manner as the deer horns.

To Utilize the Hoofs of Big Game

Dealers in taxidermy supplies sell nickel fittings for feet which are in the form of inkwells, jewel cases, thermometers, and bric-a-brac. When the hoofs are nicely polished and fitted with these, they make very attractive ornaments and presents. Fig. 50 shows the foot of an elk in the process of being made into an inkwell or jewel case. The foot is skinned out by being cut down the back and the bone taken out to the last joint, as indicated by the

dotted line A. It is then placed in the pickle (Formula 3) for a week or so. When properly tanned it is taken out, washed in cold water and the dew-claws cut off, and sewn on again lower down, as indicated at B. This is so that the hoof will stand. It is then sewn up and filled with chopped tow or excelsior, placed upon a board, and held in place by nails driven around the edge as shown. When dry the hoof is polished with oil and pumice stone, the filling taken out and replaced with plaster of Paris mixed with water. The fitting is put into place while the plaster is wet and the job is complete.

Fig. 51 shows a deer foot mounted with a thermometer. The leg must be left long in this case, and the bone taken out to the last joint. After being cured in the pickle, the bone is replaced by a piece of soft pine cut the same shape, the leg sewn up, the hoof polished and the fittings fixed as shown. It is made more attractive if fixed to a small oak panel.

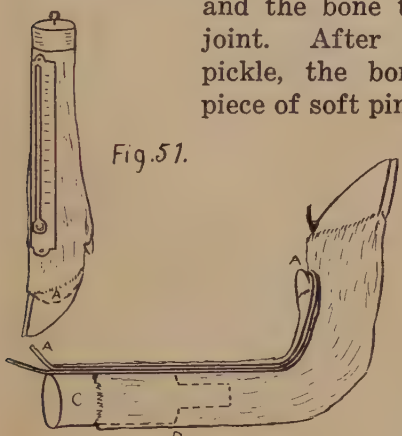


Fig. 51.
Fig 52.

The feet of deer also make attractive hat, coat, and gun racks. Proceed to skin out the leg as before but leave the bone in. After being pickled, two stout wires are inserted as shown in A.A. Fig. 52, and the leg bone is sawn off at B. A block of wood the shape shown in C. is inserted and allowed to project about one inch beyond

the skin. The wire is now bound to the bone and papier mache. It is then sewn up and bent into the desired shape. When dry the hoof is polished.

To fix it to a shield or board bore a hole the size of the wood block and make a channel for the wires. The block is inserted in the hole and the wires clinched and stapled at the back.

Making Artificial Heads and Rockwood in Paper

The use of paper in making many forms and reproductions used by the taxidermist has of recent years become almost universal.* For the purpose of this lesson we will place before us the cast of a deer head and neck, made in two halves by the process described in casting. The cast having been given several coats of shellac, is then oiled with lard, or a mixture of linseed oil and lard. The material required is ordinary building paper of two colors. Procure that kind which will soften readily in water, some varieties are coated with a resin preparation and are very hard to handle for this purpose.

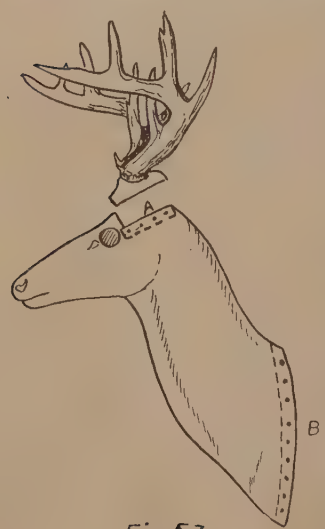


Fig. 53.

* The uses of papier mache as applied to the art of taxidermy are many. It is used in all places where a modelling composition is necessary in the making of artificial tongues for animals, in modelling the various muscles and fishy parts, in the making of artificial rocks, branches, bark, etc., in reproducing, stone, brick, plaster, stucco, etc., and a thousand and one other things to which the reader can adapt it as he proceeds.

The other requirements are a pot of paste (formula 11) and a good stiff brush is best. Proceed to tear (not cut) the paper into strips about six or eight inches long and two inches wide. Do the same with a quantity of both colors and put them in a pail to soak. When softened squeeze out the surplus water, and, having pasted the strip on both sides proceed to press a layer into the cast, follow with a layer of the other color and repeat until you have six or eight layers in all according to the thickness of the paper.

The reason for the two colors is to indicate when each layer is complete as it is necessary for a good job to have the cast of even thickness throughout. Both sides are treated in the same manner and they are then laid away to dry. This is best done slowly to prevent shrinkage. When dry a piece of board is tacked to the top of the head as shown in Fig. 53 and further secured by having pieces of paper pasted over the joint. This piece provides an attachment for the horns. The two halves are then placed in the cast, and are fastened together by having strips pasted over the joint in the inside. The joint on the outside is then filled with papier-mache, and a board is fixed into the neck as shown in B. The dotted lines indicate that the board is fixed on the inside of the paper form. When dry these forms may be gone over with a coat of hot paraffin to make them waterproof.

In the event of a taxidermist having lots of work in season these forms have the advantage that they can be made up in summer when work is slack. Furthermore they obviate cleaning of the skull, and

lastly their extreme lightness and durability is a distinct advantage.

The same process is followed in the making of artificial heads for rugs. Half heads are made in one piece; full heads in two, upper and lower jaw. Sometimes the upper portion is made in two pieces on account of undercuts. These pieces are then fixed together in the same manner as the deer, and the artificial teeth and tongue set in papier-mache. The heads are then finished with wax as recommended in the chapter on rugs.

Cases

Excellent wall cases for birds, etc., can be made in the same manner. The kind I have usually employed have been oval and concave. The method of making a form for these is as follows: Nail together a board 20 inches by 26 inches (Fig. 54). Then cut out another piece 14 inches by 20 inches and oval in shape, and nail it in position as indicated by the dotted line. Next cut a piece as shown Fig. 54 A. 20 inches by 5 inches and nail it on the center of the oval at A. Then with twine and excelsior make a manikin, first driving nails partly into the edge of the

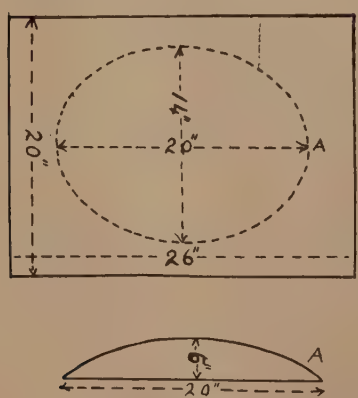


Fig. 54.

oval piece to hold the twine. This manikin may for convenience be called a convex oval. When completed cover this with a coat of papier-mache and smooth off.

When dry it is coated with shellac and the paper applied as directed for the deer head. Four or five layers will be sufficient for this. When this paper form is dry it can be coated on the inside with kalsomine or alabastine of a grey tone. If you are somewhat of an artist you can then paint an appropriate scenes on this background in oil colors. The

coat of kalsomine causes the paint to assume a dull finish which is preferable for this kind of work. This size of case is suitable for a small duck or grouse. Fig. 57 is a drawing of a case of similar size containing a wood duck, the paper case being inserted in a frame with mat and glass. This is by

far the best way of casing birds and small mammals that I know.

Should you be unable to paint the scenery the case will look very well if the background is merely tinted with a light grey or similar unobtrusive tone. The bird is set upon an artificial rock which is made more attractive by the addition of a little moss, grass or other herbage. Some very fine cases may be made with fish in this manner. One of my favorite pieces of work being three small perch, represented in the act of swimming. The background in this case made to represent rocks under water which being of a dark tone set off the brighter colors of the perch to perfection. A dull oak frame is best for these cases and will not detract from the specimen.

To Make Artificial Rock

We will presume you wish to make a rock work stand for a large hawk. Procure a piece of 1 inch board 8 inches square and upon this nail an upright 6 inches high, next nail a cross piece to this and also two pieces to the base to prevent warping.

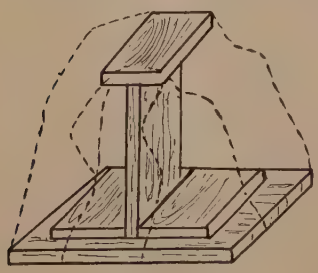


Fig. 55

Proceed to tack over this pieces of pasteboard as indicated by the dotted lines in Fig. 55, making them angular. Next cover the whole with strips of paper, pasted as for heads and set

away to dry. When dry give the stand a coat of glue and sprinkle on fine sand. Allow this to dry again and color with powder colors and glue size.

Another very good stand made by this process is one that will hang on the wall. This is very good for eagles and other large birds that might otherwise be in the way. To make this, first cut a piece for the back and fix a wire hanger to it (Fig.56). Next fashion a wedge-shaped piece for the front and another for the top. Cover with pasteboard and proceed as before.

Fig. 56

Plaster Casting

A knowledge of plaster casting even in the elementary stages is of great value to the taxidermist of today. By its means he is able to save himself no small amount of labor and in addition he can also achieve better and more artistic results than would otherwise be the case. Plaster of Paris is made in many grades, but for all ordinary purposes of the taxidermist the common variety will suffice. It varies from 3 to 5 cents per pound in quantities.

In handling plaster of Paris it is essential to have everything ready for its application as it sets very quickly when mixed with water. It can be retarded by adding a little glue to the water in which

it is mixed. Should you require it to set even more quickly, add a little salt to the water. This is somewhat of a disadvantage in some cases, as although you may wish it to set very quickly after it is poured over the object, sufficient time is not given for proper manipulation. I have therefore found it an advantage to sprinkle a cast with salt brine after it is poured.

Should the plaster in a vessel commence to set before you can use it do not attempt to soften it by the addition of more water. If this is done the plaster will not set properly and your work will be spoiled. Therefore, be careful and try to mix the right quantity and use it quickly. Should any be left over it is valueless and can only be thrown away. Always clean up tools after working or they will soon become rusted. Apart from this it is an annoyance to have need of a tool in a hurry and find it all stuck up with plaster or other material.

A Suitable Example

I have chosen to illustrate this lesson an ordinary potato, and the principles which I shall describe for the casting of that object are applicable with slight variations to almost any other.

The main thing in casting in plaster is to see that there are no undercuts, or places that would on account of their position prevent the cast from coming away from the object which has to be reproduced. In order that this may be successfully accomplished casts are made in from one to a hundred or more pieces. Large casts in which there are many pieces have to be made with a jacket. That

is, after all the pieces are ready and in place, they are trimmed off smooth on the outside and thoroughly oiled, and a second cast is made over them to hold them in place. With casts that have only two, three, or four pieces, such as the one which I shall describe, this is not necessary.

The potato is placed upon its side in such a position as shown in Fig. 58. It has now to be built up around the edges in such a manner that the plaster will only be able to cover the exposed portion. Potter's clay is also good, and for larger objects a wall of sand nicely smoothed down is best.

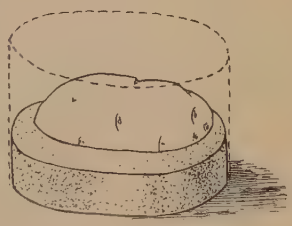


Fig. 58

The plasticine being built up as shown in Fig. 58 in such a manner that there will be no undercut, cut a strip of pliable pasteboard and tie it around the plasticine so as to form a fence about half an inch higher than the highest point of the potato,—the dotted line indicates the position. This is to retain the plaster. Any little openings that may be seen between the plasticine and the pasteboard inside must now be filled, and the exposed portion of the potato, upper surface of the plasticine, and inside of pasteboard, oiled. For ordinary work linseed oil or lard melted will do. For finer work I use olive oil. Next procure a bowl or suitable vessel and have it about one-third full of water, sift plaster into this until it heaps up in the middle, and stir until it is of a thick creamy consistency, avoid too

many air bubbles. Pour this over the exposed half of the potato, and tap the bench smartly so that the plaster will settle into every place and give a correct impression of the object.

When this part is set, which should be in about fifteen minutes, remove the pasteboard fence, and then the plasticine. This will expose the edge of the plaster. Now cut several V-shaped notches around the edge (Fig. 59).

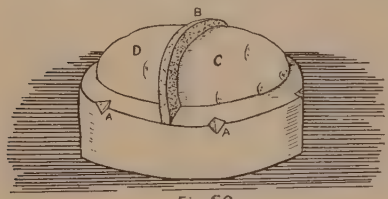


Fig. 59.

On examining the potato let us suppose we find that if the remaining portion were cast in one piece it would not relieve properly on account of the position of the eyes. We proceed therefore to place a strip of plasticine in the position as shown in B. Now replace the pasteboard fence, raise it about half an inch and tie with string. Oil section 6 and the edge of the plaster and plasticine, and mix and pour plaster over that portion, being careful that none runs over D. Next re-

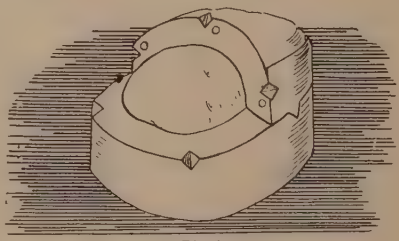


Fig. 60.

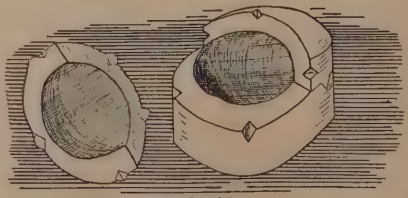


Fig. 61

move the fence and the strip of plasticine, and your cast will have the appearance of Fig. 60. Cut three notches as shown by O.O.O. Replace the fence, oil and cover the remaining portion with plaster. If properly done the cast should separate easily into three pieces, as shown in Fig. 61.

Now examine the inside of the cast for blow holes, and repair, by first saturating the inside with water and then filling the holes with a little plaster mixed with water. As previously stated the foregoing methods are applicable to all objects no matter how large, merely requiring a little intelligence on the part of the operator to adjust the portions correctly.

Casting a Fish

The method of casting a fish is simply to imbed it to exactly half its depth in fine sand. This sand must be dampened so that it will be easy to smooth. The fins and tail are backed with potter's clay and pinned into place. The fish, first having had the mucus removed by sponging with water in which a little alum has been dissolved, is oiled. Plaster is then mixed to the consistency of cream, and poured over the fish. Personally I always build a fence of wood around it before I commence to cast, some, however, dispense with this and manipulate the plaster with a trowel or knife. The fence, I think is best especially when working alone.

The first coat having been poured entirely over the exposed portion of the fish and well shaken down, proceed to mix the next coat a little heavier and work in thoroughly some pieces of tow to bind

it together. (This is essential in all large plaster casts.)

When the cast is of sufficient thickness, allow it to set thoroughly then remove the fence. Turn it over and lift out the fish, repair the blow-holes and set away to dry. Fish usually are cast only one-half and reproduced in paper, plaster, wax or other material and afterwards painted.

To make the cast of a deer head for use in making paper forms, the head, after being shaped as instructed for mounting heads, is coated all over with potter's clay and modelled nicely in every detail as it would appear beneath the skin. Make sure that both sides are alike and then cast as previously instructed.

Full and Half Head Casts

These are made in the same manner. The casts in all cases except where wax is to be used are repaired, allowed to dry thoroughly, and given two or three coats of shellac.

To take an impression in wax from a plaster cast, first immerse the cast in lukewarm water, and when still wet, pour in the wax. The knowledge of the proper temperature of wax for casting can only be gained by experience: the only information which can be proffered is not to have it too hot. (The proper stage of drying in which casts should be considered fit for this work is when they no longer appear slimy.)

Casing

It should be the aim of all taxidermists to try and case their specimens. Professionally this is

often a difficult matter as the customer does not always wish to go to that expense. The amateur who is making a collection of trophies for himself has not this excuse, for apart from the cost of glass the expense is trifling. I am not taking into consideration the work which should be a pleasure in this case.

To my mind nothing is more annoying than to see a bird on which I had at one time expended a deal of care, all dishevelled, covered with fly specks and smoke. To me, it makes no difference that I was well paid for the work. It is, in truth, love's labor lost. It is therefore better for the amateur to do a few specimens and preserve them well than to amass a large collection that in a few years will be an eyesore and a ruin. Incidentally, such specimens are a bad advertisement.

One of the first essentials in casing a bird or animal is to have such embellishments as are used, as near as possible to those which would be found in its natural habitat. For this purpose the taxidermist should gather quantities of grasses, moss, ferns, lichens, etc., dry them and store them away in boxes. Grasses had better be gathered before they are fully ripe. They can be successfully tinted as needed by the sparing application of oil and powder colors. In using these it is better to put too little rather than too much, always remembering that the specimen is the principal object and keeping everything else subservient to it.

Imitation Snow

It is sometimes found necessary to represent snow. This is done as follows. Cover the parts

necessary with a thick coating of flour paste, and with a shaker made of a tin with a perforated cover dust over thickly with equal parts of powdered alum and glass frosting.

A light frosted coating may be imitated on vegetation by dipping it into a strong solution of alum and allowing it to dry, when the deposited alum will crystallize. Glass frosting may be purchased from a dealer in taxidermist supplies, as may also artificial icicles made of glass. Should it be desired to represent deep snow, first cover the parts with fine cotton batting and then proceed as above.

To make artificial branches, stumps or small ground objects, first wrap wire about excelsior or tow to the desired shape and cover with the following composition—To equal parts of whiting and fine saw-dust add glue until it is of the consistency of thin mortar, to this may be added any desired powder color. It is best to have it dark to imitate the shadows in the crevasses of bark. Apply this to the branch and scratch it with the modelling tool or a splinter of wood. Do not be too particular in this operation or you will lose the desired effect.

When dry color the branch with powder colors and strong glue size, putting the color thickest on the highest places. It is essential in this class of work to have the shadows or crevasses very thinly painted and dark in tone, and the lights or high parts thickly painted and lighter in tone.

Rough rocks, etc., may be made in the same manner.

It adds greatly to their appearance to place birds and animals in some characteristic attitude. Owls, hawks, etc., as well as some carnivorous animals

may be represented as devouring some species on which they prey, and for this purpose various small birds and animals that are too much damaged to make good specimens may be roughly stuffed and placed in the claws of the hawks, etc., and under the feet and in the mouths of carnivorous mammals.

Wading birds may be represented as standing or swimming in the water. For this purpose I have successfully used sheet celluloid, which I obtained from a manufacturer of automobile covers. Holes were cut to allow the feet or body of the birds to pass through and others punched for grasses, weeds, etc., the bed of the pool being first represented by making rocks, sand, mud, etc., by the processes previously described. I might remark here that it is of no use to model small pebbles: use the natural ones. The idea of modelling is to overcome weight.

While these few hints only touch upon the theme the reader will no doubt be able, with their help to devise many artistic combinations and groups. Much depends in this, as in other portions of the work, upon the artistic ability of the individual and his ability to observe.

Coloring and Tinting

The proper use of color is indispensable to the taxidermist. The many hideously painted specimens one sees are indisputable evidence of this.

The colors commonly used by the taxidermist are ordinary powder colors for rough work which can be obtained from most any hardware or paint store, and artist tube colors (oil) for finer work.

The list of colors given on page 100, whilst small, will do for ordinary purposes if properly mixed.

A few combinations are as follows:

To Make	Use a Combination of:
Grey	permanent blue—light red.
Grey	ivory black—white.
Grey	permanent blue—yellow ochre—vermilion.
Green	chrome yellow—prussian blue.
Green	ivory black—yellow ochre.
Green	ivory black—chrome yellow.
Green	permanent blue—chrome yellow.
Green	permanent blue—yellow ochre.
Green	Vandyke brown—chrome yellow.
Orange	vermilion—chrome yellow.
Orange	light red—chrome yellow.
Orange	chrome (orange).

Many other combinations will suggest themselves as the reader progresses. It is better where fine work is required to use Cadmium yellow in place of chrome, it being much finer, more permanent and by no means so raw.

Before commencing to color a specimen see that the surface is properly cleaned. In painting the legs and feet of birds do not put the paint on so thickly as to hide the scaly appearance. In painting the bills, two or more colors often come together; see that the edges are properly blended, using a fine artist's brush for this. On larger surfaces an artist's badger softener is best. If the paint is to dry with a gloss, mix it with turpentine only; for a semi-gloss turpentine and linseed oil in equal parts; for an ordinary gloss add a little Damar varnish to the above; and for a high gloss use varnish alone to mix the color with or paint in the ordinary way and varnish afterward.

or silver rim around the pupil. This must be put on first also, and next the ground tint.

Special hollow globes are sold by some dealers, these have no pupil. In this case the pupil is painted first, next the veins and lastly the ground color. With care an exceptionally fine job can be made in this manner, but for all ordinary work the colored eyes sold by the dealer in taxidermy supplies are all right.

The foregoing hints will be of little use to the student unless he makes up his mind to adhere closely to nature in all that he does, and to be patient and persevering, and satisfied only with the best that is in him.

It may also give greater confidence to know that a large proportion of Professional Taxidermists in this country took their first lessons from written instructions and gained proficiency by practice and observation.

The writer when a youth learned in this manner and, by working at the profession evenings earned more than he did at his regular business.

The student will also find many opportunities of doing likewise but must, of course, first attain some degree of proficiency in the art. Each job that leaves his hands is an advertisement, good or bad.

Preservative Soaps, Solutions and Other Formulas

In the practice of taxidermy various preservatives are necessary to properly cure the skins, tissues, etc., and render them as far as possible im-

mune from the attacks of insects and decomposing agents.

That which is most universally used is arsenic, a deadly poison. It is however, compounded and mixed with other ingredients in such a manner that, used carefully it has no harmful effects.

For many years I was prejudiced against its use, and tried various non-poisonous preservatives, which while excellent in some climates and under certain conditions, are no good in this hotbed of moths and dermestes.

Regarding the use of arsenic and alum in equal parts, and in powder form, which is advised by some, I say distinctly NO, the particles of powder in the atmosphere cause a soreness in the nostrils, and must affect the lungs in a similar degree and also at one time of my life when I used this powder I was troubled with small ulcerations under the finger nails, no matter how careful I might be.

I finally decided to use arsenical soap and have done so for many years and found that if used with care it has no ill effects. The formula which is generally used is one advised by Horniday and others and is compounded as follows:

Formula 1

Arsenical Soap—(Horniday)

White bar soap	1 lb.
Powdered Arsenic	1 lb.
Camphor	2½ ozs.
Subcarbonate of Potash	3 ozs.
Alcohol	4 ozs.

Directions—The soap should be the best quality

of laundry soap and of such composition that it can be reduced with water to any degree of thinness. Soap that becomes like a jelly when melted will not answer and should never be used. Slice the soap and melt in a small quantity of water over a slow fire, stirring sufficiently to prevent its burning. When melted add the potash, and stir in the powdered arsenic. Next add the camphor which should be dissolved in alcohol at the beginning of the operation. Stir the mass thoroughly, boil it down to the consistency of thick molasses, and pour into an earthen or wooden jar to cool and harden. Stir it occasionally while cooling to prevent the arsenic from settling at the bottom. When cold it should be like lard or butter. For use mix a small quantity with water until it resembles buttermilk, and apply with a common paint brush.

A very good soap can be mixed by simply taking one pound of good laundry soap, slicing it thin and then boiling as described, and afterwards stirring in one pound of powdered arsenic, whilst still hot. I prefer to do this in the open air, and not to hold the face over the pot while stirring. The laundry soap seems to contain sufficient potash or lye for all ordinary purposes. Camphor is not soluble in water and must always be dissolved in alcohol.

A solution which is of great value and is extensively used by professional taxidermists is compounded as follows:

Formula 2

Corrosive Solution

Corrosive Sublimate	1 oz.
Wood Alcohol	1 quart

Corrosive sublimate (Bichloride of Mercury) is a deadly poison, and vessels containing it should be conspicuously labeled and kept out of the reach of children. It is best to have your druggist prepare the solution for you, and a much smaller quantity mixed in the same proportions will be sufficient. It is used to paint the skull, leg and wing bones of birds and animals that are to be mounted, and also to destroy moths and other insects that may be found attacking mounted specimens, it is applied in some cases with a brush and in others with a small syringe. In all cases use care in its use.

For the preservation of hides in a wet state, the salt and sulphuric acid pickle as given by Rowley is most extensively used by taxidermists. It is composed as follows:

FORMULA 3

Tan liquor for preserving hides in a wet state (Rowley.)

Water	1 gallon
Salt	1 quart

Bring to a boiling point to facilitate dissolving the salt. Add sulphuric acid (by measure) 1 ounce. Allow to cool before immersing hides. More salt, even a saturated solution will not injure a skin.

Many taxidermists advise the use of a solution of salt and alum for preserving hides, but I have found that the alum shrinks the skin to such an extent in some cases as to render its correct mounting almost impossible, and worse, the shrinking continues for a long time after the specimen is mounted, to such a degree as to break the stitches and cause other distortions.

It often happens that the taxidermist receives a specimen for mounting that is in a very advanced state of decomposition, with the hair slipping in places. The following pickle, also after Rowley is then very good:

FORMULA 4

Salt and Alum Pickle (*Rowley*)

Water .....1 gallon
Salt .....1 quart
Alum powdered or crystallized, 1 pint.

Bring to a boiling point and cool.

Hides that are very far gone may sometimes be saved by having this pickle quite warm, and then plunging in the hide and then turning and stirring to see that every part is saturated with the pickle, afterwards leaving the hide immersed for from 2 days to a week according to thickness, etc.

Probably one of the most useful compositions that is used by the taxidermist is Papier-Mache. For permanent work it has entirely superseded potter's clay and other compositions such as putty. It is prepared in a variety of ways. For ordinary work the following is perhaps the best:

FORMULA 5

Papier-Mache (*Tose*)

Make a quantity of paper pulp by tearing up and soaking pieces of common paper, afterwards rubbing it to a pulp. With some kinds of paper boiling will help. After it is thoroughly shredded squeeze out all surplus moisture with the hands. Now take a quantity of this pulp and add hot glue, in propor-

tion about one of glue to three of pulp. Mix this thoroughly and then add plaster of Paris until the whole is thoroughly mixed and of the consistency of putty. The best method of mixing is to take a glazed earthen bowl, and, by pounding with a rounded stick gradually work the ingredients together in the same manner as a druggist uses a pestle and mortar. Should it be desired to color the mache, dry colors should be mixed in at the same time as the plaster. This composition will set more or less rapidly in proportion to the amount of glue used. It can be kept moist and workable for some days by wrapping in a damp cloth.

Formula 6

Papier-Mache (Tose)

Where a large quantity of papier-mache is to be used quickly, it is best made as follows:

Make a quantity of thick flour paste in a pail and stir in while quite hot pieces of fine paper. I always use the papers in which oranges and lemons are wrapped for this purpose, your grocer will save you a quantity, no doubt. This paper has the advantage of dissolving as it is stirred. Put in as much as the paste will hold. The best way to prepare this is to place a quantity on a board and with a trowel or large knife mix in Plaster of Paris until it is of the consistency required.

This has the advantage of being very inexpensive and is useful to cover large manikins and to make large masses of rock. Should it set too quickly it can be retarded by the addition of a little glue.

FORMULA 7

Papier-Mache, Fine (Tose)

A very fine papier-mache can be made as follows: Make a quantity of flour paste and stir into it fine paper. I usually use paper serviettes or towels, as they are of loose texture. Place a portion of this in a bowl and add Le Page's Liquid Glue and Dental Plaster, and mix thoroughly. This is an exceptionally fine modelling composition and can be tinted by the addition of powder colors.

Dental plaster is a very fine grade of plaster of Paris, and can be obtained from a dealer in dentist's supplies.

FORMULA 8

Gilder's Putty

The following composition is of great value where extreme hardness is required. If properly prepared it can be pressed into moulds and will take the finest impressions.

Glue, best white	1½ lbs.
Water	1½ pints
Resin	1 lb.
Boiled Linseed Oil	¼ pint
Raw Linseed Oil	⅛ pint

Soak glue in water and then boil in water bath (glue pot). Place resin in a separate pot and add the two oils, and melt. It is better to do this in a water bath, that is have the vessel that contains the resin mixture set in another with water the same as a glue pot. This last mixture is very inflammable and great care must be used in melting. When the resin and oil is thoroughly melted pour

it gradually into the hot glue, stirring constantly. Now pour the whole mass into a larger vessel and add whiting. This must be finely powdered and entirely free from lumps. Mix and knead together while hot as you would dough. This composition can be kept a long time by placing in a box or jar, first moulding it into little cakes, and then covering it with whiting. When wanted for use it is placed in a steamer and softened. Pieces can then be cut off and pressed or moulded into any desired shape. This is the composition used for ornamenting picture frames.

Formula 9

Wax for mouths (Tose)

Bleached beeswax	1 ounce
Paraffin wax	2 ounces

Melt these together in a water bath. Place a small quantity of tube oil color in a spoon, fill with hot wax, and with a small palate knife or smooth piece of stick mix the wax and color. When well mixed hold the spoon in the melted wax and stir, the color will then mix evenly with the melted wax. Always melt in a water bath, otherwise the wax will burn and the color settle to the bottom. Should the reader have difficulty in making the wax combine properly he may overcome it by adding a greater proportion of paraffin wax, but this is not advisable on account of the low melting point of paraffin. Joins and laps in the wax may be smoothed by rubbing with a small piece of rag dampened with water.

For a good modelling wax I cannot do better than quote Montague Browne.

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